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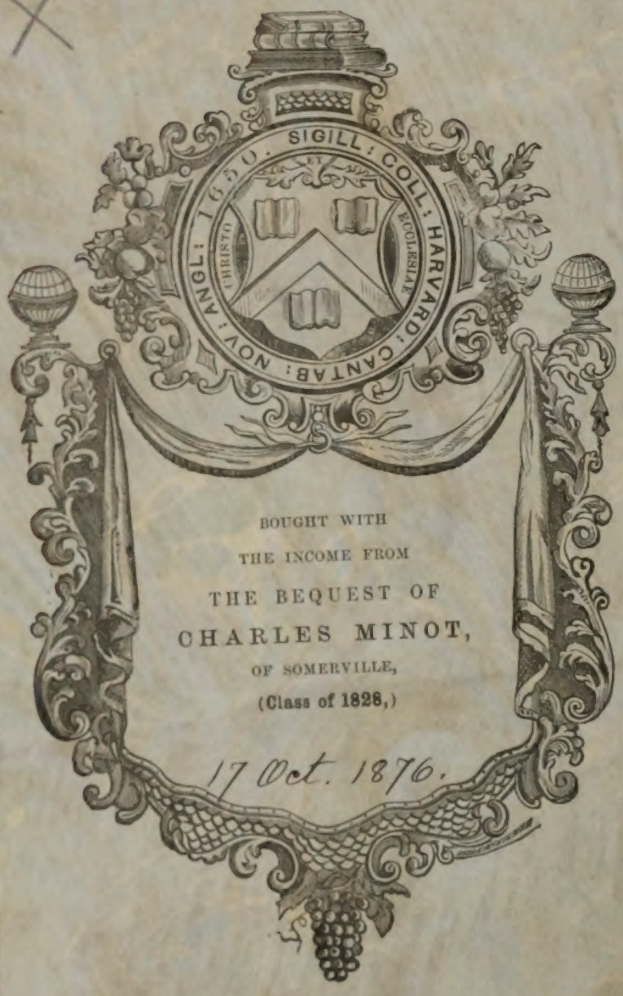

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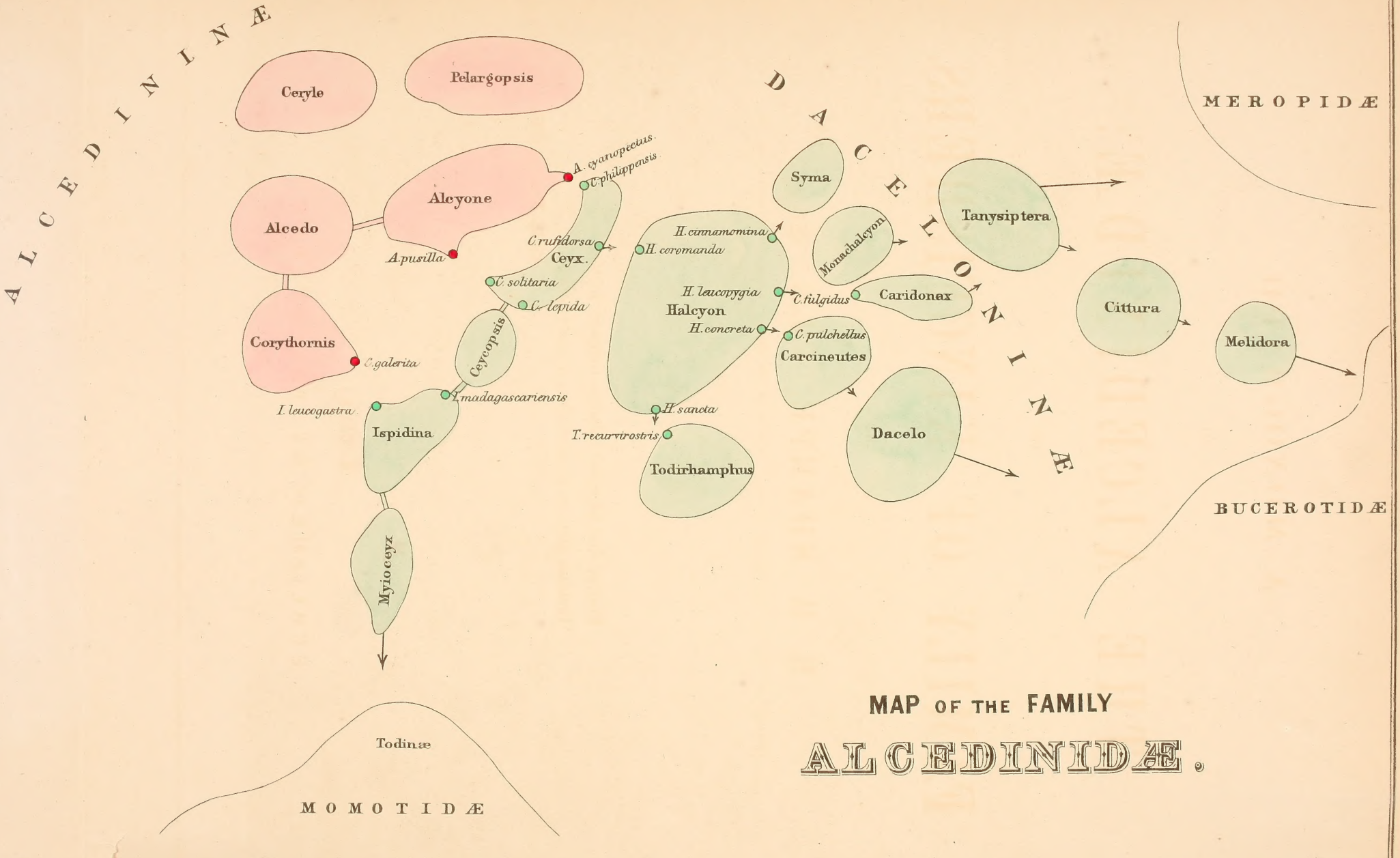

MAP OF THE FAMILY

ALCEDINIDÆ.

R. B. S. del.

A MONOGRAPH

OF

THE ALCEDINIDÆ:

OR,

FAMILY OF KINGFISHERS.

BY

R. B. SHARPE, F.L.S., &c.,

LIBRARIAN TO THE ZOOLOGICAL SOCIETY OF LONDON, MEMBER OF THE GERMAN ORNITHOLOGISTS' SOCIETY, &c., &c.

Perque dies placidos hiberno tempore septem
Incubat alcyone pendentibus æquore nidis.

Ovid, Met. xi. 745.

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AND

THE NOBLEMEN AND GENTLEMEN

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CONTENTS.

Title-Page.
Dedication.
List of Contents.
List of Plates.
Introduction.
Classification.
Geographical Distribution.
Concluding Remarks.
Literature.
Alcedo ispida .... p. 1.
,, bengalensis .... p. 11.
,, grandis .... p. 19.
,, moluccensis .... p. 21.
,, asiatica .... p. 23.
,, quadribrachys .... p. 25.
,, semitorquata .... p. 27.
,, euryzona .... p. 29.
,, beryllina .... p. 31.
Corythornis vintsioides .... p. 33.
,, cristata .... p. 35.
,, cæruleocephala .... p. 39.
Alcyone azurea .... p. 41.
,, pulchra .... p. 45.
,, diemensis .... p. 47.
,, Lessoni .... p. 49.
,, affinis .... p. 51.
,, pusilla .... p. 53.
,, cyanopectus .... p. 55.
Ceryle guttata .... p. 57.
,, lugubris .... p. 59.
,, rudis .... p. 61.
,, maxima .... p. 67.
,, Sharpii .... p. 71.
,, torquata .... p. 73.
Ceryle stellata .... p. 77.
,, alcyon .... p. 79.
,, amazonia .... p. 83.
,, Cabanisi .... p. 87.
,, americana .... p. 89.
,, inda .... p. 91.
,, superciliosa .... p. 93.
Pelargopsis melanorhyncha .... p. 95.
,, amauroptera .... p. 97
,, leucocephala .... p. 99.
,, Gouldi .... p. 101.
,, Fraseri .... p. 103.
,, gurial .... p. 105.
,, malaccensis .... p. 107.
,, burmanica .... p. 109.
,, floresiana .... p. 111.
Ceyx philippinensis .... p. 113.
,, solitaria .... p, 115.
,, melanura .... p. 117.
,, tridactyla .... p. 119.
,, rufidorsa .... p. 121.
,, Sharpei .... p. 123.
,, Dillwynni .... p. 125.
,, cajeli .... p. 127.
,, Wallacei .... p. 129.
,, lepida .... p. 131.
,, uropygialis .... p. 133.
Ceycopsis fallax .... p. 135.
Ispidina madagascariensis .... p. 137.
,, leucogastra .... p. 139.
,, picta .... p. 141.
,, natalensis .... p. 145.
,, ruficeps .... p. 147.
,, Lecontei .... p. 149.

Syma torotoro .... p. 151.
,, flavirostris .... p. 153.
Halcyon coromanda .... p. 155.
,, badia .... p. 159.
,, smyrnensis .... p. 161.
,, gularis .... p. 165.
,, cyanoventris .... p. 167.
,, pileata .... p. 169.
,, erythrogastra .... p. 171.
,, semicærulea .... p. 173.
,, albiventris .... p. 177.
,, orientalis .... p. 181.
,, chelicutensis .... p. 183.
,, senegaloides .... p. 187.
,, cyanoleuca .... p. 189.
,, senegalensis .... p. 191.
,, dryas .... p. 193.
,, malimbica .... p. 195.
,, albicilla .... p. 197.
,, leucopygia .... p. 199.
,, nigrocyanea .... p. 201.
,, lazuli .... p. 203.
,, diops .... p. 205.
,, Macleayi .... p. 207.
,, pyrrhopygia .... p. 211.
,, cinnamomina .... p. 213.
,, australasiæ .... p. 215.
,, Lindsayi .... p. 217.
,, concreta .... p. 219.
,, Hombroni .... p. 221.
,, sacra .... p. 223.
,, Juliæ .... p. 227.
,, chloris .... p. 229.
Halcyon sordida .... p. 233.
,, Forsteni .... p. 235.
,, vagans .... p. 237.
,, sancta .... p. 239.
,, funebris .... p. 243.
Todirhamphus veneratus .... p. 245.
,, recurvirostris .... p. 247.
,, tutus .... p. 249.
Carcineutes pulchellus.... .... p. 251.
,, melanops .... p. 253.
Monachalcyon monachus .... p. 255.
Caridonax fulgidus .... p. 257.
Tanysiptera sylvia .... p. 259.
,, doris .... p. 263.
,, Emiliæ .... p. 265.
,, sabrina .... p. 267.
,, nympha .... p. 269.
,, Ellioti .... p. 271.
,, hydrocharis .... p. 273.
,, acis .... p. 275.
,, Margarethæ .... p. 277.
,, nais .... p. 279.
,, galatea .... p. 281.
,, Riedeli .... p. 283.
Dacelo gigas .... p. 285.
,, Leachi .... p. 289.
,, cervina .... p. 291.
,, occidentalis .... p. 293.
,, Gaudichaudi .... p 295.
,, tyro .... p. 297.
Cittura sanghirensis .... p. 299.
,, cyanotis .... p. 301.
Melidora macrorhina .... p. 303.

LIST OF PLATES.

Plate 1. . . Alcedo ispida
,, 2. . . ,, bengalensis
,, 3. . . ,, grandis
,, 4. . . ,, moluccensis
,, 5. . . ,, asiatica
,, 6. . . ,, quadribrachys
,, 7. . . ,, semitorquata
,, 8. . . ,, euryzona
,, 9. . . ,, beryllina
,, 10. . . Corythornis vintsioides
,, 11. . . ,, cristata
,, 12. . . ,, cæruleocephala
,, 13. . . Alcyone azurea
,, 14. . . ,, pulchra
,, 15. . . { ,, Lessoni / ,, affinis }
,, 16. . . ,, pusilla
,, 17. . . ,, cyanopectus
,, 18. . . Ceryle guttata
,, 19. . . ,, rudis
,, 20. . . ,, maxima
,, 21. . . ,, Sharpii
,, 22. . . ,, torquata
,, 23. . . ,, alcyon
,, 24. . . ,, amazonia
,, 25. . . ,, Cabanisi
,, 26. . . ,, americana
,, 27. . . ,, inda
Plate 28. . . Ceryle superciliosa
,, 29. . Pelargopsis melanorhyncha
,, 30. . . ,, amauroptera
,, 31. . . ,, leucocephala
,, 32. . . ,, Gouldi
,, 33. . . ,, Fraseri
,, 34. . . ,, gurial
,, 35. . . ,, burmanica
,, 36. . . ,, floresiana
,, 37. . . Ceyx philippinensis
,, 38. . . ,, solitaria
,, 39. . . ,, melanura
,, 40. . . ,, tridactyla
,, 41. . . ,, rufidorsa
,, 42. . . ,, Sharpei
,, 43. . . ,, Dillwynni
,, 44. . . ,, cajeli
,, 45. . . ,, Wallacei
,, 46. . . ,, lepida
,, 47. . . ,, uropygialis
,, 48. . Ceycopsis fallax
,, 49. . . Ispidina madagascariensis
,, 50. . . ,, leucogastra
,, 51. . . ,, picta
,, 52. . . ,, natalensis
,, 53. . . ,, ruficeps
,, 54. . . ,, Lecontei

Plate	55.	Syma torotoro	
,,	56.	,, flavirostris	
,,	57.	Halcyon coromanda	
,,	58.	,, badia	
,,	59.	,, smyrnensis	
,,	60.	,, gularis	
,,	61.	,, cyanoventris	
,,	62.	,, pileata	
,,	63.	,, erythrogastra	
,,	64.	,, semicærulea	
,,	65.	,, albiventris	
,,	66.	,, orientalis	
,,	67.	,, chelicutensis	
,,	68.	,, senegaloides	
,,	69.	,, cyanoleuca	
,,	70.	,, senegalensis	
,,	71.	,, dryas	
,,	72.	,, malimbica	
,,	73.	,, albicilla	
,,	74.	,, leucopygia	
,,	75.	,, nigrocyanea	
,,	76.	,, lazuli	
,,	77.	,, diops	
,,	78.	,, Macleayi	
,,	79.	,, pyrrhopygia	
,,	80.	,, cinnamomina	
,,	81.	,, australasiæ	
,,	82.	,, Lindsayi	
,,	83.	,, concreta	
,,	84.	,, Hombroni	
,,	85.	,, sacra	
,,	86.	,, Juliæ	
,,	87.	,, chloris	
Plate	88.	Halcyon sordida	
,,	89.	,, Forsteni	
,,	90.	,, vagans	
,,	91.	,, sancta	
,,	92.	,, funebris	
,,	93.	Todirhamphus veneratus	
,,	94.	,, recurvirostris	
,,	95.	,, tutus	
,,	96.	Carcineutes pulchellus	
,,	97.	,, melanops	
,,	98.	Monachalcyon monachus	
,,	99.	Caridonax fulgidus	
,,	100.	Tanysiptera sylvia	
,,	101.	,, doris	
,,	102.	,, Emiliæ	
,,	103.	,, sabrina	
,,	104.	,, nympha	
,,	105.	,, Ellioti	
,,	106.	,, hydrocharis	
,,	107.	,, acis	
,,	108.	,, Margarethæ	
,,	109.	,, nais	
,,	110.	,, galatea	
,,	111.	,, Riedeli	
,,	112.	Dacelo gigas	
,,	113.	,, Leachi	
,,	114.	,, cervina	
,,	115.	,, occidentalis	
,,	116.	,, Gaudichaudi	
,,	117.	,, tyro	
,,	118.	Cittura sanghirensis	
,,	119.	,, cyanotis	
,,	120.	Melidora macrorhina	

INTRODUCTION.

I owe the suggestion of the present Monograph to Mr. W. J. Williams, of the Zoological Society, who, in the year 1865, proposed that we should write together a synopsis of the known species of Kingfishers. Owing, however, to increased calls upon his time, Mr. Williams was forced to abandon the project, and the work was dropped for some time. In 1866 I again resumed the task by myself, and have since steadily persevered with the work until I have been at length enabled to bring it to a satisfactory conclusion. I take this opportunity of returning my grateful thanks for their kindness to the many friends who have contributed to the success of the undertaking, and without whose assistance it would have been impossible to finish the book. In this country my thanks are due especially to Lord Walden, Lord Lilford, Dr. P. L. Sclater, Professor Newton, and Messrs. John Gould, Osbert Salvin, G. Dawson Rowley, H. E. Dresser, G. R. Gray, and especially to Mr. A. R. Wallace, who placed at my disposal his beautiful collection of Kingfishers. In France, M. Jules Verreaux has done all he could to assist me, and render my book as perfect as possible. To Germany my thanks are due in the persons of Dr. Peters, of Berlin, who sent me over some rare specimens to figure, and of Drs. Hartlaub and Finsch, of Bremen, who have always displayed the greatest willingness to help me with all their power. In Italy, Count Salvadori, of Turin, has given me much valuable aid; and I am indebted to him for the loan of several unique birds. Nor must I forget Count Turati, of Milan, who has from time to time sent me from his magnificent collection specimens necessary for the work. In Vienna another kind friend, Herr A. von Pelzeln, has lent me some rarities from the Imperial Cabinet. Lastly, I have to record my obligations to Professor Schlegel, who not only did his utmost to assist me during my visit to Leiden, but allowed me to bring to England all the specimens which I considered indispensable to the satisfactory completion of my book. Neither shall I forget the kindness I received during the same visit from his compatriots, Dr. G. F. Westerman and Mr. Hegt, of Amsterdam, where the Museum contains a very good series of Kingfishers.

It would be invidious to say any thing about the way in which my artist, Mr. Keulemans, has performed the task allotted to him. The attention which he has bestowed upon the work merits my highest approbation; and I only regret that in some instances the effect of his beautiful drawings has been marred by the incapacity of the colourists. The department of printing and colouring the plates has been intrusted to Mr. P. W. M. Trap; and

though on the whole well executed, I am sorry that I cannot give unqualified praise in some instances.

Lastly, I have to return my heartfelt thanks to those subscribers who have favoured me with their patronage. Without their assistance it would have been impossible to finish the book successfully; and the encouragement accorded by so many kind friends has cheered me on through all the difficulties of the task, which have been far greater than I ever anticipated. I have no right to endeavour to disarm criticism, after having undertaken the production of so ambitious a work; but I do hope that the errors of the present monograph, which, of course, is not by any means perfect, may be viewed with a lenient eye; for it must be remembered that an author who commences so large an undertaking at the age of seventeen, and who as he pens these last words has not attained to the age of twenty-three, cannot have lived long enough to have digested all the mass of literature which would bear upon the subject, and is therefore entitled to some slight consideration. But I believe that the facts stated in this book may be depended upon; for in every instance where an assertion has appeared doubtful I have been careful not to state it, leaving it to future investigation to prove or disprove the correctness of the original statement. Finally, a short "History of the Work" may be of use to students who desire to know the date of publication of any of the species.

Dates of Publication.

Part I., July 1st, 1868, contained figures and descriptions of *Caridonax fulgidus*, *Carcineutes pulchellus*, *Halcyon pileata*, *H. dryas*, *Ceyx cajeli*, *C. wallacii*, *Ceryle alcyon*, *C. superciliosa*.

Part II., October 1st, 1868, contained figures and descriptions of *Cittura sanghirensis*, *C. cyanotis*, *Ceyx lepida*, *C. solitaria*, *C. tridactyla* (Vosm.), *C. melanura*, *Carcineutes melanops*, *Ceryle cabanisi*.

After this part was published it was discovered that *C. tridactyla* (Vosm.) was not the true *C. tridactyla* (Pallas); and the name was corrected in the succeeding Part.

Part III., January 1st, 1869, contained figures and descriptions of *Dacelo gaudichaudi* and *D. tyro*, *Tanysiptera nympha*, *Halcyon badia*, *Syma torotoro* and *S. flavirostris*, *Ceyx tridactyla* and *C. philippinensis*.

The species figured, as above mentioned, in Part III. as *C. tridactyla* not being the true *C. tridactyla*, but *C. rufidorsa*, letterpress to accompany the Plate is now given, and with the last Part a slip of paper is published to paste over the name of *C. tridactyla* published in Part III.; and then all will be correct.

Part IV., April 1st, 1869, contained figures and descriptions of *Melidora macrorhina*, *Halcyon senegaloides*, *Ispidina madagascariensis*, *I. leucogastra*, *I. picta*, *Ceyx uropygialis*, *Alcyone cyanopectus*, *Ceryle inda*.

Part V., July 1st, 1869, contained figures and descriptions of *Ceryle amazonia*, *Alcedo beryllina*, *A. semitorquata*, *Corythornis vintsioides*, *Ceycopsis fallax*, *Ispidina ruficeps*, *Halcyon orientalis*, *H. cyanoleuca*.

Part VI., October 6th, 1869, contained descriptions of the following:—*Ceryle guttata*,

C. lugubris, *C. maxima*, *C. sharpei*, *Alcyone pusilla*, *Corythornis cristata*, *C. cæruleocephala*, *Ispidina natalensis*, *Tanysiptera sylvia*. Plates were given of all, except *C. lugubris*, of which a figure was not deemed necessary.

Part VII., January 1st, 1870, contained descriptions and figures of *Ceryle torquata*, *Alcedo grandis*, *Alcyone pulchra*, *Halcyon cyanoventris*, *H. albiventris*, *H. senegalensis*, *H. malimbica*, *Dacelo leachi*.

Part VIII., April 1st, 1870, contained figures and descriptions of *Pelargopsis amauroptera*, *P. leucocephala*, *P. gouldi*, *P. burmanica*, *P. floresiana*, *Ceyx sharpii*, *Dacelo cervina*, *D. occidentalis*.

Part IX., July 1st, 1870, contained figures and descriptions of *Pelargopsis melanorhyncha*, *Alcedo euryzona*, *A. bengalensis*, *H. coromanda*, *H. gularis*, *H. erythrogaster*, *H. lazuli*, *Tanysiptera hydrocharis*.

Parts X. & XI., October 1st, 1870, contained figures and descriptions of *Alcedo moluccensis*, *A. asiatica*, *Alcyone azurea*, *Ceryle americana*, *Ceyx dillwynni*, *Halcyon smyrnensis*, *H. diops*, *H. macleayi*, *H. nigro-cyanea*, *H. concreta*, *H. pyrrhopygia*, *H. sordida*, *H. cinnamomina*, *Monachalcyon monachus*, *Tanysiptera margarethæ*, *Dacelo gigas*.

Part XII., November 1st, 1870, contained descriptions of *Alcyone diemensis*, *Ceryle stellata*, *Pelargopsis gurial*, *Halcyon semicærulea*, *H. chloris*, *H. sancta*, *H. forsteni*, *Todirhamphus recurvirostris*, *Tanysiptera doris*, *T. acis*. Of all of these, figures were given, except of *Alcyone diemensis* and *Ceryle stellata*.

Part XIII., December 1st, 1870, contained descriptions and figures of *Alcedo ispida*, *A. quadribrachys*, *Halcyon chelicutensis*, *H. australasiæ*, *H. funebris*, *H. sacra*, *Todirhamphus veneratus*, *T. tutus*.

Parts XIV. & XV., January 1st, 1871. These parts contain descriptions of *Ceryle rudis*, *Alcyone affinis*, *A. lessoni*, *Pelargopsis fraseri*, *P. malaccensis*, *Ispidina lecontei*, *Halcyon lindsayi*, *H. hombroni*, *H. albicilla*, *H. vagans*, *H. juliæ*, *H. leucopygia*, *Tanysiptera nais*, *T. galatea*, *T. sabinæ*, *T. emiliæ*, *T. ellioti*, *T. riedeli*, all of which are figured except *Pelargopsis malaccensis*. This concluding number also contains the chapter on Anatomy, Introduction, Titlepage, &c.

CLASSIFICATION.

The Kingfishers form a very natural family of the great Picarian order, and are alike remarkable for their brilliant coloration and for the variety of curious and aberrant forms which are included among their number. The general characteristics of the family cannot, I think, be better stated than in the words of Mr. A. R. Wallace, who, in his admirable essay on "a Natural Arrangement of Birds" (Ann. Nat. Hist. 1856, vol. xviii. p. 193), thus speaks of the Fissirostres, to which artificial group the Kingfishers belong:—

"The external characters which distinguish these birds are, very short and weak legs, long, or at all events powerful wings, and a wide gape. Their characteristic habit is to sit

motionless watching for their prey, to dart after it and seize it on the wing and to return to their original position to swallow it. The groups which possess these peculiarities in the greatest perfection are the Trogons and the Kingfishers." To this excellent definition I may add that the Alcedinidæ nest in holes and lay white eggs. It is, however, to be remarked that, in accordance with a modification of the habits of the various genera, a corresponding modification has taken place in the mode of nidification, the piscivorous section of the family nesting for the most part in holes in the banks of streams, while the insectivorous section of the family generally nest in the holes of trees, not necessarily in the vicinity of water. My friend M. Jules Verreaux, who has had in Africa opportunities of observing the breeding-habits of the Wood Kingfishers (*Halcyon*, *Ispidina*, &c.), tells me that these birds nest in holes already formed in the trees, or in rotten wood. Sometimes they enlarge the hole and eject the débris; this, however, is often left to form a platform for the eggs. They do not, as a rule, lay as many eggs as the true Kingfishers, two or three being the average number.

I propose to divide the family *Alcedinidæ* into two subfamilies, which present recognizable structural peculiarities. Naturally they might be divided into three, viz. :—

1. *Alcedininæ* (*sc.* Piscivores)—being those Kingfishers which feed *principally* on fish, and seldom or never touch insects &c.

2. *Halcyoninæ* (*sc.* Omnivores)—being those Kingfishers whose food is of a mixed character, and which, subsisting partly on fish, also devour great quantities of insect food, beside Crustacea, Lizards, &c. The Halcyons, which are the most typical representatives of this subfamily, are most plentiful in the Æthiopian region, and M. Jules Verreaux again favours me with a note concerning their habits as observed by him in Africa:—

"Wood Kingfishers (*Halcyones*) generally feed on insects in mimosa trees and dry forests; but when the supply is scanty, they turn their attention to lizards. Should this food also fail, they will frequent the water and fish like a true *Alcedo*. Sometimes they will hover, as if to inspect the water beneath them, remaining in the air for some time, but not so long as a true Kingfisher, and then, returning to their perch, they will sit for hours scarcely moving, till a passing fish is secured by an active plunge. A curious fact also is, that when they are in the bush there are generally seven or eight in close proximity, but when they go to the water they keep separate, each by itself. These Kingfishers, when they frequent the water or the sea-shore, eat crustacea or small shell-fish, which they hold *between* their feet, and breaking the shell by repeated blows of their bill, throw the latter away and devour the animal."

3. *Daceloninæ* (*sc.* Reptilivores)—being those Kingfishers whose food consists for the most part of Reptiles, Crustacea, &c., and which seldom or never touch fish.

I find, however, that though the natural relation of these three subfamilies to one another is tolerably well defined, yet tangible characters for the separation of the two latter are wanting; and from the nature of the principles which I have always endeavoured to set before me (namely, of only recognizing structural and definable characters) I am compelled to merge these two subfamilies into one, for which I prefer to retain the name *Daceloninæ*.

Nor will this arrangement be found unsatisfactory, as the links of the two subfamilies (*Monachalcyon* and *Tanysiptera*) are so closely allied that the chain of connexion seems almost unbroken.

I have taken the genus *Alcedo* as my starting-point, as it is the most usually accepted type of the family; and thence I have traced the progression of the genera towards *Melidora*, which I consider to be the extreme development of Reptilivorous Kingfisher. That the natural sequence in the evolution of the genera has been from *Melidora* to *Alcedo* I endeavour to show in a subsequent page.

The family *Alcedinidæ* may be divided into two subfamilies, as follows:—

a. Rostro compresso, culmine distinctè carinato . . . . . 1. *Alcedininæ*.
b. Rostro plus minusve depresso; culmine lævi, rotundato vel sulcato . . 2. *Daceloninæ*.

These two subfamilies appear to contain 125 species, belonging to 19 genera, as follows, namely:—

Alcedininæ	5 genera	41 species.
Daceloninæ	14 genera	84 species.

I have been unable to distinguish several species, all of which are enumerated in my notices of the different works in the chapter on "Literature."

Subfamily I. Alcedininæ.

Conspectus generum Alcedininarum.

a. Caudâ breviore quam rostro, vel huic æquante.
  a'. Digitis quatuor.
    a''. Caput cristatum, plumis pilei antici ad occiput haud extendentibus 1. *Alcedo*.
    b''. Caput cristatum, plumis pilei antici post occiput extendentibus . . 2. *Corythornis*.
  b' Digitis tribus . . . . . 3. *Alcyone*.
b. Caudâ rostrum multo superante.
  a'. Gonyde versus basin latâ . . . . . 4. *Ceryle*.
  b'. Gonyde acutâ, valdè compressâ . . . . . 5. *Pelargopsis*.

A reference to the plate of generic characters is sufficient to show the difference in the shape of the crest in *Alcedo* and *Corythornis* (Plate I. figs. 1 & 2), the form of the crest-feather in the latter genus being elongated and broadened out towards the apex. Again, although *Alcedo* and *Alcyone*, in the form of bill and wing, are almost identical, yet the absence of a toe in the latter genus, in addition to the generally uniform nature of the upper plumage, presents, in my opinion, sufficient ground for generic separation (figs. 1*a* & 3). On the other hand, however, *Ceryle* and *Pelargopsis* are exceedingly difficult to separate; but a character can be found in the skulls, where it will be seen that that of *Ceryle* (fig. 11) has the lachrymal bones as in true *Alcedo*, whereas *Pelargopsis* has these bones developed into a backward process (fig. 12). There is also a difference in the acuteness of the ridge of the gonys, which is the character adduced in my diagnostic table.

Genus 1. Alcedo.

Type.
Alcedo, Linn. Syst. Nat. i. p. 178 (1766) . . . . . *A. ispida.*

Clavis specierum.

a. Torque pectorali nullo.
  a'. Abdomine rufo vel intensè castaneo.
    a''. Tectricibus alarum conspicuè cyaneo apicatis.
      a'''. Regione paroticâ rufâ.
        a''''. Major, viridi-cyanea: rostro brevi . . . . . 1. *ispida.*
        b''''. Minor, lætè cyanea: rostro longo . . . . . 2. *bengalensis.*
      b'''. Regione paroticâ nigrâ cyaneo notatâ.
        c''''. Major, viridis: scapularibus viridibus . . . . . 3. *grandis.*
        d''''. Minor, lætè cyanea: scapularibus cyaneis . . . . . 4. *moluccensis.*
    b''. Tectricibus alarum cyaneo vix apicatis.
      c'''. Major: sexibus similibus: suprà saturatè ultramarina . . 5. *quadribrachys.*
      d'''. Minor: sexibus differentibus: suprà latè ultramarina . . 6. *asiatica.*
  b'. Abdomine pallidè aurantiaco . . . . . 7. *semitorquata.*
b. Torque pectorali cyaneo.
  a'. Major: scapularibus nigris saturatè beryllino lavatis . . . . . 8. *euryzona.*
  b'. Minor: scapularibus beryllinis . . . . . 9. *beryllina.*

The full synonymy of the different species is given in the work; but I shall take the opportunity here afforded me of adding notes or correcting mistakes; so that this Introduction ought to be carefully collated with the accounts given in the body of the 'Monograph.'

Genus 2. Corythornis.

Type.
Corythornis, Kaup, Fam. Eisv. p. 10 (1848) . . . . . *C. cæruleocephala.*

Clavis specierum.

a. Rostro nigro . . . . . 1. *cristata.*
b. Rostro corallino.
  a'. Cristâ longâ malachitaceâ . . . . . 2. *cyanostigma.*
  b'. Cristâ brevi, ultramarinâ . . . . . 3. *galerita.*

1. Corythornis cristata.

This Madagascar bird is certainly the true *Alcedo cristata* of Linnæus (*ex* Briss.); and I therefore regret that this was not before fully recognized by me. The species in the present work has been called *C. vintsioides.*

2. Corythornis cyanostigma.

The true *A. cristata* of Linnæus being now proved to be the Madagascar bird, the continental species must bear the name *cyanostigma*, which is to be regretted, as the appellation is applicable to the young bird only.

3. Corythornis galerita.

I am glad to see that Dr. von Heuglin agrees with me as to the improbability of this species being found in N.-E. Africa. The name of *C. cæruleocephala* (Gm.) sinks into a synonym in favour of the older name proposed by Müller (Syst. Nat. Suppl. p. 94).

Genus 3. Alcyone.

	Type.
Alcyone, Swains. Classif. of B. ii. p. 336 (1837)	*A. azurea.*

Clavis specierum.

a. Torque pectorali nullo.
  a'. Abdomine rufo.
    a''. Rostro robustiore.
      a'''. Suprà saturatè ultramarina . . . . . 1. *lessoni.*
      b'''. Suprà lætissimè ultramarina . . . . . 2. *affinis.*
    b''. Rostro tenuiore.
      a'''. Rostro breviore: pileo nigro distinctè fasciato . . . . . 3. *diemenensis.*
      b'''. Rostro longiore, pileo haud fasciato.
        a''''. Hyponchondriis rufis . . . . . 4. *azurea.*
        b''''. Hypochondriis pulcherrimè ultramarinis . . . . . 5. *pulchra.*
  b'. Abdomine albo . . . . . 6. *pusilla.*
b. Torque pectorali lazulino . . . . . 7. *cyanopectus.*

Of the species above enumerated, *Alcyone diemenensis* is the only one which may be considered to hold subspecific rank; for I do not think its specific characters are of much importance. As regards *Alcyone pusilla*, this species may be considered one of the links between the genera *Alcyone* and *Ceyx*, while another link is to be found in *Alcyone cyanopectus*, which is certainly very close to *Ceyx philippinensis*. Indeed it will require the researches of some able naturalist, like Mr. Wallace, in the Philippines, clearly to show us what are the differences between the two species. My friend Count Salvadori, who has paid much attention to these birds, stipulates for their both being placed in the genus *Alcyone*; but I would rather keep them in the genus *Ceyx*, because we should then have plumage as an additional generic character, and this is by no means an unimportant matter in the classification of Kingfishers. All the species of *Alcyone*, distinguished by their uniform backs, would be in one genus, while all the species of *Ceyx*, with their brilliant lilac or cobalt backs, would be in another genus, and the most aberrant forms would be found in *Ceyx philippinensis* and *Ceyx cyanopectus*. If researches in the Philippine Islands show (what I believe to be more than likely) that the two last-named birds are merely sexes or different stages of one and the same species, it will naturally be wondered that I could put them into different genera. It will then be necessary to examine the types of my descriptions; and it will be found that, according to the only outward character to be discovered, the two species have been rightly placed. Externally the differences between *Ceyx* and *Alcyone* are very slight; both are three-toed genera; and

the great difference is to be found in their habits; for *Alcyone* is a fish-eater and partakes of the characteristics of true *Alcedo*—that is to say, has a long, thin, pointed bill, much compressed, and strongly carinated: *Ceyx*, on the other hand, is a forest-loving genus, living away from the water, feeding on insects, and bearing affinity towards *Halcyon*; the bill is inclined to be depressed, has no strongly marked keel; and the genus could not be compared with *Alcyone*, were it not for the intermediate links to be found in the Philippine species above mentioned. A full knowledge of the habits and, still more, of the osteology of these two species is to be desired; for it is possible that, as in the case of *Ceryle* and *Pelargopsis*, where a difficulty is met with in finding a tangible and definable character for distinction, a good osteological character can be adduced for generic separation.

We have now to consider the long-tailed section of the subfamily *Alcedininæ*, in which only two genera, *Ceryle* and *Pelargopsis*, are included. In the former of these two genera a dacelonine peculiarity is first observed in the difference of the sexes, but not, as in most of the genera, in a perfect dissimilarity, or a difference in colour of the tail, but by the presence or absence of a pectoral band. This subject can be better discussed after the sections of the genus have been pointed out.

Genus 4. Ceryle.

	Type.
Ceryle, Boie, Isis, 1828, p. 316	*C. rudis.*
Ispida, Swains. Classif. of B. ii. p. 326 (1837)	*C. alcyon.*
Megaceryle, Kaup, Fam. Eisv. p. 8 (1848)	*C. guttata.*
Chloroceryle, Kaup, Fam. Eisv. p. 8 (1848)	*C. superciliosa.*
Amazonis, Reich. Handb. *Alced.* p. 28 (1851)	*C. superciliosa.*
Streptoceryle, Bonap. Consp. Vol. Anis. p. 10 (1854)	*C. torquata.*
Ichthynomus, Cab. & Heine, Mus. Hein. Th. ii. p. 150 (1860)	*C. maxima.*

That most of the above genera are founded upon differences of plumage rather than upon structural peculiarities, will be shown by the following:—

Clavis specierum.

a. Sexibus similibus.
  a'. Dorso fusco, nigro et albo conspicuè transfasciato.
    a''. Major: rostro magis compresso . . . . . 1. *lugubris.*
    b''. Minor: rostro ad basin paullo dilatato . . . . . 2. *guttata.*
b. Sexibus dissimilibus.
  a'. Dorso albo, nigro maculato . . . . . 3. *rudis.*
  b'. Dorso schistacco-nigro: mas torque pectorali rufo distinguendus.
    a''. Abdomine medio albo . . . . . 4. *maxima.*
    b''. Abdomine nigro, albo transfasciato . . . . . 5. *sharpii.*
  c'. Dorso clarè schistaceo.
    a''. Abdomine rufo, torque pectorali maris absente.
      a'''. Major: dorso immaculato . . . . . 6. *torquata.*
      b'''. Minor: dorso albo stellato . . . . . 7. *stellata.*
    b''. Abdomine albo . . . . . 8. *alcyon.*

d'. Dorso æneo-viridi.
a''. Gulâ albâ.
a'''. Major: alis extus immaculatis . . . . . 9. *amazonia*.
b'''. Media: rostro robustiore: maculis alaribus distinctioribus . . 10. *cabanisi*.
c'''. Minor: rostro tenuiore: maculis alaribus minus distinctis . . 11. *americana*.
b''. Gulâ rufescente.
d'''. Major: abdomine toto crissoque intensè castaneis, pectore concolori . . . . . 12. *inda*.
e'''. Minor: abdomine medio crissoque purè albis*: pectore castaneo 13. *superciliosa*.

The genus *Ceryle*, in general appearance and shape of bill, would be more truly an Alcedinine form than its near ally *Pelargopsis*, but for the curious difference in sex already noticed. Although a casual observer would fail to perceive the reason why the Pied Kingfishers should be placed in separate sections, the habits of the two kinds are different, in the first place; but, most of all, the ground-colour of the plumage is quite different, the pied appearance being produced by an opposite combination of colours in each case. Then, again, in the first section of the genus the sexes do not differ; and here must be the connecting link with *Pelargopsis*. I think that I did wrong in separating in the 'Monograph' the Japanese form of *Ceryle guttata* as a distinct species under Temminck's name *C. lugubris*; it is nothing more than a slightly larger race. All the other species of the genus *Ceryle* have the sexes different, the distinction being always exhibited in the form of a band. Thus in the Pied Kingfisher (*Ceryle rudis*) the male is characterized by a double band across the breast. The next section of the genus has the male distinguished by a beautiful rufous band across the chest, the belly being white, while in the female it is rufous. The third division consists of those species with slaty-blue backs, of which there are three. In the large species where the belly is red, the female takes the band across the chest, this character being absent in the male; whereas in the small species (*C. alcyon*), which has the belly white, the male is distinguished by a broad pectoral band, while the female has two, the lower one being very narrow. All the other species of *Ceryle* have bronzy-green backs; and in the first subdivision, which contains three species, the belly is white, and the male is characterized by a bright rufous pectoral band, this being replaced in the female by green and white feathers; while in the last subdivision, which contains only two species, with rufous bellies, the male is rufous underneath, while the *female* has a green pectoral band.

The last genus of the subfamily *Alcedininæ* is *Pelargopsis*, which has generally been included in *Halcyon*, but which from its habits is closely allied to *Ceryle*, to which genus in form it also closely assimilates.

Genus 5. Pelargopsis.

	Type.
Pelargopsis, Gloger, Handb. d. Naturg. p. 338 (1842)	?
Rhamphalcyon, Reich. Handb. Alced. p. 16 (1851)	*P. gurial*.
Hylcaon, Reich. Handb. Alced. p. 18 (1851)	*P. melanorhyncha*.

* Owing to a stain on the plumage of the specimen figured, the belly has in some of the plates of *C. superciliosa* been represented as yellowish.

Clavis specierum.

a. Rostro nigro . . . . . 1. *melanorhyncha*.
b. Rostro rubro.
a'. Scapularibus brunneis . . . . . 2. *amauroptera*.
b'. Scapularibus cyaneis vel viridi-cyaneis.
a''. Capite haud pileato, collo postico concolori.
a'''. Major: suprà viridi-cyanea . . . . . 3. *gouldi*.
b'''. Minor: suprà lætissimè cyanea . . . . . 4. *leucocephala*.
b''. Capite indistinctè pileato, ochrascenti-cinereo . . . . . 5. *fraseri*.
c''. Capite distinctè pileato.
c'''. Pileo haud cyaneo lavato.
a''''. Pileo albescenti-cinereo . . . . . 6. *burmanica*.
b''''. Pileo brunneo.
aa. Major: viridis . . . . . 7. *gurial*.
bb. Minor: cyaneo-viridis . . . . . 8. *malaccensis*.
d'''. Pileo pallidè brunneo, viridi-cyaneo distinctè lavato . . . . 9. *floresiana*.

It will always be a moot question whether several of the above species are not climatic modifications of one typical form; but I think, from the fact of each bird mentioned possessing a certain clearly specified character, they may all be regarded as good species.

Subfam. II. Daceloninæ.

Conspectus generum Daceloninarum.

a. Rostro longiore quam caudâ.
a'. Digitis tribus . . . . . 6. *Ceyx*.
b'. Digitis quatuor.
a''. Halluce longiore quam digito interiore . . . . . 7. *Ceycopsis*.
b''. Halluce digitum interiorem æquante.
a'''. Tarso longiore quam halluce . . . . . 8. *Myioceyx*.
b'''. Tarso hallucem æquante . . . . . 9. *Ispidina*.
b. Rostro breviore quam caudâ.
a'. Culmine lævi, rotundato.
a''. Rectricibus 12.
a'''. Commissurâ serratâ . . . . . 10. *Syma*.
b'''. Commissurâ integrâ.
a''''. Naribus linearibus.
aa. Tarso breviore quam halluce cum ungue mensurato.
aa'. Commissurâ rectâ: sexibus similibus . . . . . 11. *Halcyon*.
bb'. Commissurâ valdè curvatâ: sexibus dissimilibus . . 12. *Dacelo*.
bb. Tarso longiore quam halluce cum ungue mensurato.
cc'. Rostro simo . . . . . 13. *Todirhamphus*.
dd'. Rostro compresso, culmine rotundato.
aa''. Commissurâ rectâ . . . . . 14. *Monachalcyon*.
bb''. Commissurâ curvatâ . . . . . 15. *Caridonax*.

b'''. Naribus parvis, oblongatis . . . . . 16. *Carcineutes.*
b''. Rectricibus 10 . . . . . 17. *Tanysiptera.*
b'. Culmine simo vel sulcato.
c''. Culmine recto, integro . . . . . 18. *Cittura.*
d''. Culmine versus apicem valdè decurvato et sulcato . . . . . 19. *Melidora.*

Although it is very difficult to determine some of the above genera, I firmly believe that they are all well established, the principal difference being found in the bill, as will be seen by a reference to the plate. As, however, these differences are those of degree, I have sought for secondary characters in my diagnosis of the genera, in order to aid the researches of the student. First of all we have the most Alcedinine-looking birds of the subfamily in the small section where the bill is longer than the tail; and it is here we must first look for the chain of affinity. This is speedily found in the genera *Ispidina* and *Ceyx* on the one hand, and in the genera *Corythornis* and *Alcyone* on the other. I have already spoken of the connecting links between *Ceyx* and *Alcyone*; and it is not hard to find another direct affinity between *Corythornis* and *Ispidina*, not only in the genera, but in the species; for it would not be difficult to believe that *Corythornis galerita* and *Ispidina leucogastra* were one and the same species at no very distant period of time. Secondary facts tend to confirm this suggestion, especially since both species occur in the same limited district, being confined in their range to the countries and islands bordering on the bights of the west coast of Africa*. In ordinary specimens of *C. galerita* the difference is sufficiently striking; but sometimes the old birds get very white on the belly; and this circumstance, added to the fact that *C. galerita* has a shorter crest than the other two species of *Corythornis*, renders it by no means impossible to mistake an adult example for *Ispidina leucogastra*. Again, the last-named species exhibits a slight keel on the bill, and is partly piscivorous in habit; so that it is by no means certain that Prince Bonaparte and Mr. G. R. Gray are so very far wrong in placing it in *Corythornis*. Indeed the species may be considered either an aberrant *Corythornis* or an aberrant *Ispidina*. Let no one, however, suppose that, on account of this apparent connexion between the two genera, I consider them identical. Not in the least; for the true *Ispidinæ*, such as *I. picta* and *I. natalensis*, are entirely different in form and in habit. The *Ispidinæ* nest in holes of trees (never in banks), and, again, are purely insectivorous. Some, such as *I. madagascariensis*, are only found in the thick forests, while others frequent the banks of streams, but never feed on fish. Two species, which I have included in the genus *Ispidina* in my 'Monograph,' are so decidedly aberrant that, on account of their flat bills and longer tarsi, I propose to separate them under a distinct genus, which may be called *Myioceyx*. The characters are given in the Plate of Genera (figs. 6, 6 *a*, 6 *b*). Leaving *Ispidina madagascariensis* as the last of the *Ispidinæ*, we have to consider now the next step in our approach to *Melidora*, the curious genus *Ceycopsis* from Celebes. This appears to be a direct link between *Ispidina* and *Ceyx*, not only in form but also in combining the peculiar coloration of the two genera. The absence of true *Ceyx* from Celebes has always been noticed by Mr. Wallace and ourselves as a peculiar feature in the avifauna of that island;

* This we say advisedly; for we do not believe that *C. galerita* really occurs in North-east Africa.

and we were therefore not a little interested when a Ceycean form turned up in that locality. Still more were we surprised on finding that it presented a recognizable link between the Ethiopian *Ispidinæ* and the Malayan *Ceyces*. The bill partakes more of the form of the latter genus; but an inner toe is present as in *Ispidina*, though very small. In the Plate are representations of the bills and feet of the genera *Ceycopsis* (figs. 5, 5 *a*) and *Ceyx* (figs. 4, 4 *a*), while a good figure of *Ceycopsis fallax* will be found in the body of the work. This concludes the consideration of the short-tailed Dacelonine genera, a synopsis of which I next proceed to give.

Genus 6. Ceyx.

	Type.
Ceyx, Lacép. Mém. de l'Inst. 1801, p. 511	*C. tridactyla.*
Ceycis, Gloger, Handb. der Naturg. p. 338	?
Therosa, Müller, MS.	*C. solitaria.*

Clavis specierum.

A. Capite et uropygio lilacinis : rostro corallino.
  a. Maculâ ad latera colli cæruleâ nullâ.
    a'. Scapularibus lilacinis.
      a''. Tectricibus alarum rufis, haud cæruleo lavatis . . . . . 1. *rufidorsa.*
      b''. Tectricibus alarum nigris ac rufis, cæruleo lavatis . . . . 2. *sharpii.*
    b'. Scapularibus nigris cæruleo lavatis . . . . . 3. *dillwynni.*
  b. Maculâ ad latera colli cæruleâ.
    a'. Major : interscapulio et scapularibus rufis . . . . . 4. *melanura.*
    b'. Minor : interscapulio et scapularibus nigris cærulco lavatis . . 5. *tridactyla.*
B. Capite nigro, cæruleo aut cyaneo maculato : dorso postico et uropygio cyaneis, ultramarinis, aut argenteo-cæruleis.
  a. Rostro corallino.
    a'. Rostro breviore : genis et regione paroticâ nigris : dorso postico et uropygio argenteo-cæruleis . . . . . 6. *cajeli.*
    b'. Rostro longiore : genis et regione paroticâ cyaneo aut cæruleo maculatis : dorso postico et uropygio cyaneis aut ultramarinis.
      a''. Scapularibus nigris : dorso postico et uropygio lætè cyaneis . 7. *wallacii.*
      b''. Scapularibus cæruleo lavatis : dorso postico ultramarino : uropygio cyanescente.
        a'''. Major : rostro robustiore : maculis loralibus majoribus : capitis summi maculis et interscapulio cærulescentibus . 8. *lepida.*
        b'''. Minor : subtùs intensè aurantia : uropygio lætè argentescente . . . . . 9. *uropygialis.*
  b. Rostro nigro : capite cyaneo fasciato.
    a'. Major : pectore et abdomine intensè rufis . . . . . 10. *philippinensis.*
    b'. Minor : pectore et abdomine flavis : gulâ albâ . . . . . 11. *solitaria.*

Genus 7. Ceycopsis.

Type.
Ceycopsis, Salvad. Atti R. Accad. Torino, 1869, p. 447 . . . . . *C. fallax.*

Species unica.

Ceycopsis fallax (Schl. Ned. Tijdschr. 1866, p. 387).

Genus 8. Myioceyx.

Myioceyx, Sharpe, *antea*, p. xi . . . . . *M. ruficeps.*

Clavis specierum.

a. Capite rufo, fronte nigra . . . . . 1. *ruficeps.*
b. Capite nigro, cyaneo fasciato . . . . . 2. *lecontii.*

Genus 9. Ispidina.

Type.
Ispidina, Kaup, Fam. Eisv. p. 11 (1848) . . . . . *I. picta.*

Clavis specierum.

a. Dorso lætè ultramarino.
  a'. Abdomine rufo.
    a''. Maculâ auriculari nullâ . . . . . 1. *picta.*
    b''. Maculâ auriculari cyaneâ . . . . . 2. *natalensis.*
  b'. Abdomine albo . . . . . 3. *leucogastra.*
b. Dorso lilacino . . . . . 4. *madagascariensis.*

Genus 10. Syma.

Type.
Syma, Less. Voy. Coq. i. p. 688 (1828) . . . . . *S. torotoro.*

The genus *Syma* is closely allied to *Halcyon*, from which it differs in its serrated bill. In plumage it closely assimilates to the cinnamon-coloured group of the genus *Halcyon*.

Clavis specierum.

a. Rostro aurantiaco . . . . . 1. *torotoro.*
b. Rostro flavo, versus apicem nigro . . . . . 2. *flavirostris.*

Genus 11. Halcyon.

The genus *Halcyon* has been divided by systematic ornithologists into many genera, a careful examination of which convinces me that these differences are merely those of style of plumage, and not those of form. The following table will indicate the manner in which these genera have been founded :—

Type.
Halcyon, Swains. Zool. Illustr. i. text to pl. 27 (1820) . . . . . *H. senegalensis.*
Entomothera, Horsf. Trans. Linn. Soc. xiii. p. 173, note (1820) . . . *H. coromanda.*

	Type.
Calialcyon, Bonap. Consp. Gen. Av. i. p. 156 (1850)	*H. coromanda.*
Chelicutia, Reich. Handb. Alced. i. p. 38 (1851)	*H. chelicutensis.*
Actenoides, Hombron & Jacq. Voy. Pôle Sud, Zool. iii. p. 100 (1853) .	*H. hombroni.*
Cancrophaga, Bonap. Consp. Vol. Anis. p. 9 (1854)	*H. badia.*
Cyanalcyon, Bonap. Consp. Vol. Anis. p. 9 (1854)	*H. pyrrhopygia.*
Pagurothera, Cab. & Heine, Mus. Hein. Th. ii. p. 152 (1860)	*H. chelicutensis.*
Entomobia, Cab. & Heine, Mus. Hein. Th. ii. p. 154 (1860)	*H. cyaniventris.*
Sauropatis, Cab. & Heine, Mus. Hein. Th. ii. p. 158 (1860)	*H. sancta.*
Caridagrus, Cab. & Heine, Mus. Hein. Th. ii. p. 161 (1860)	*H. concreta.*
Astacophilus, Cab. & Heine, Mus. Hein. Th. ii. p. 162 (1860)	*H. lindsayi.*

Clavis specierum.

A. Rostro toto rubro.
- *a.* Pileo lilacino . . . . . 1. *coromanda.*
- *b.* Pileo rufo-castaneo: dorso postico lætè viridi-cyaneo.
  - *a'.* Scapularibus castaneis, subtùs alba . . . . . 2. *badia.*
  - *b'.* Scapularibus viridi-cyaneis.
    - *a''.* Gutture et pectore medio albis . . . . . 3. *smyrnensis.*
    - *b''.* Gulâ albâ: pectore toto castaneo . . . . . 4. *gularis.*
- *c.* Pileo nigro: dorso postico ultramarino.
  - *c'.* Abdomine cyaneo . . . . . 5. *cyanoventris.*
  - *d'.* Abdomine flavescenti-rufo . . . . . 6. *pileata.*
- *d.* Pileo albescente: dorso lætè cyaneo.
  - *e'.* Major: pileo albido: coloribus purioribus. . . . . 7. *erythrogastra.*
  - *f'.* Minor: pileo cinerascente: coloribus dilutioribus . . . . . 8. *semicærulea.*
- *e.* Pileo brunneo, distinctè striato: rostro breviore.
  - *g'.* Majores: scapularibus nigris.
    - *a''.* Pectore brunneo striato . . . . . 9. *albiventris.*
    - *b''.* Pectore unicolori . . . . . 10. *orientalis.*
  - *h'.* Minor: scapularibus brunneis . . . . . 11. *chelicutensis.*
- *f.* Pileo cinereo, thalassino lavato: pectore cinereo: abdomine medio albo . . . . . 12. *senegaloides.*

B. Maxillâ rubrâ: mandibulâ nigrâ.
- *a.* Scapularibus lætè thalassino lavatis.
  - *a'.* Major: pileo lætè thalassino: strigâ nigrâ ultra regionem paroticam productâ . . . . . 13. *cyanoleuca.*
  - *b'.* Minor: pileo fusco-cinereo: strigâ nigrâ circa oculum eunte . 14. *senegalensis.*
- *b.* Scapularibus nigerrimis.
  - *c'.* Major: capite summo brunneo . . . . . 15. *dryas.*
  - *d'.* Minor: capite summo cinereo . . . . . 16. *malimbica.*

C. Rostro nigro vel nigricante, mandibulâ ad basin fulvescente.
- *a.* Pileo albo . . . . . 17. *albicilla.*
- *b.* Pileo saturatè ultramarino.
  - *a'.* Uropygio albo . . . . . 18. *leucopygia.*
  - *b'.* Uropygio lætissimè cyaneo.

a''. Scapularibus nigerrimis . . . . . 19. *nigrocyanea.*
b''. Scapularibus lætè cyaneis.
a'''. Abdomine imo cyaneo . . . . . 20. *lazuli.*
b'''. Abdomine imo albo.
a''''. Rostro nigro, basin versus fulvescente: *fem.* torque pectorali nullo . . . . . 21. *macleayi.*
b''''. Rostro toto nigro: *fem.* torque pectorali cyaneo . . . 22. *diops.*
c. Pileo lætè vel sordidè viridi, cyaneo vel viridi-cyaneo, interdum sed rariùs albo, viridi medio notato.
a'. Uropygio rufo . . . . . 23. *pyrrhopygia.*
b'. Uropygio lætè vel viridi-cyaneo.
a''. Collo postico cinnamomeo.
a'''. Uropygio sordidè viridi.
a''''. Major: subtùs pallidè cinnamomina . . . . . 24. *cinnamomina.*
b''''. Minor: subtùs intensè cinnamomina . . . . . 25. *australasiæ.*
b'''. Uropygio lætè cyaneo.
a''''. Subtùs squamata, plumis albis, viridi marginatis . . 26. *lindsayi.*
b''''. Subtùs intensè fulva.
aa. Pileo sordidè olivaceo-viridi . . . . . 27. *concreta.*
bb. Pileo saturatè cyaneo . . . . . 28. *hombroni.*
b''. Collo postico albo, vel albo nigricante notato.
a'''. Capitis lateribus albis.
a''''. Lætè viridis . . . . . 29. *sacra.*
b''''. Sordidè viridis . . . . . 30. *juliæ.*
b'''. Capitis lateribus viridibus, pileo concoloribus.
a''''. Subtùs albæ.
aa. Pileo et dorso superiore lætè viridibus . . . . . 31. *chloris.*
bb. Pileo et dorso superiore sordidè viridibus . . . . 32. *sordida.*
b''''. Subtùs alba, viridi-nigro maculato . . . . . 33. *forsteni.*
c''''. Subtùs fulvescentes.
cc. Major: suprà sordidè viridis . . . . . 34. *vagans.*
dd. Minor: suprà lætè viridis . . . . . 35. *sancta.*
d. Pileo dorsoque superiore cum scapularibus saturatè brunneo-nigris: cinctu capitali albo . . . . . 36. *funebris.*

Now, although so many different styles of plumage are exhibited in the above tabular diagram, yet in form the birds are nearly identical, and certainly belong to one genus. The first section, with the head lilac, contains only one species, of which, however, there are several subspecies. Next we have three species whose predominant colour is chestnut, though the tinge of this colour differs in each of the three, while the white, which is confined to the throat in *H. gularis*, extends on to the breast in *H. smyrnensis*, and over the whole under-surface in *H. badia*. Only two species have the head black; and these are very distinct and different from all other members of the genus. Of all the above-mentioned birds *Halcyon badia*, which is a representative in Western Africa of a thoroughly Indian type of *Halcyon*, is the only Ethiopian species, the others being every one Asiatic. The presence in West

Africa of such a form of Kingfisher has yet to be accounted for, especially when it is remembered that it is coexistent along the bights of the Gold Coast with *Pitta angolensis*, also an isolated representative of an Indian genus.

The next subdivision contains two species with beautiful white heads. It is questionable, after the experiences detailed by M. Jules Verreaux in the account of *H. semicærulea* in the body of the work, whether *H. erythrogastra* should be considered any thing more than a large and brightly coloured subspecies of the continental bird. The next section contains nothing but Kingfishers purely of an Ethiopian type, with striped heads and a very distinct crest; and, lastly, we have apparently the connecting link between the red-billed section of the group and those which have the bill particoloured, black and red. This species is *H. senegaloides*, which possesses a red bill and yet partakes thoroughly of the style of plumage of *Halcyon senegalensis*. This last-named species, with *H. cyanoleuca*, constitute the next subdivision; along with two other species remarkable for their robust form (*H. dryas* and *H. malimbica*), these are the largest *Halcyones* of the Ethiopian type.

The third division of the genus contains all the species having dusky black bills with the base of the lower mandible yellowish; and I still subdivide the Kingfishers it contains according to the colour of the head. Thus my first section contains only one species, which has the head pure white; this is *H. albicilla*; but it is to be remarked that I have every reason to believe that *H. sacra*, which is the representative of this species in Oceania, when very old, assumes a white head, though I have never yet seen one with the head entirely white. Secondly, we have a small subdivision with brilliant blue plumage, forming the genus *Cyanalcyon* of Bonaparte. I have asked M. Jules Verreaux about this genus, for which Bonaparte quotes him as the authority; and he assures me that it was never published by him, and he was much surprised to see his name in print; all he remembers is mentioning in the course of conversation to Prince Bonaparte that these blue Kingfishers formed a section in the genus *Halcyon*, which might be termed subgenerically *Cyanalcyon*, and that the Prince made a note of it at the time, which it seems he afterwards published. The Blue Kingfishers all possess striking characteristics, the males and females in every species, so far as we yet know, differing conspicuously one from another. They all have brilliant-coloured backs, with the exception of *H. leucopygia*, which, as its name denotes, has the back white. *H. nigrocyanea* is one of the largest of the section, and is at once distinguished by its black scapulars. Those which have the scapulars cobalt are three in number, viz. *H. lazuli*, *H. diops*, and *H. macleayi*. The blue on the breast and abdomen separates the first of these three; and of the last two the females are also not difficult to distinguish, but the males are very similar. All the remaining species of *Halcyon* have green heads, inclining, according to the species, to more or less of a blue colour: they have been generally classed in the genus *Todiramphus*; but, as will be presently seen, the members of this genus are really very distinct in form. One of the most remarkable species of the green group is *Halcyon pyrrhopygia*, which, by reason of its red back, stands alone from all its congeners. Next we have a group of cinnamon-coloured *Halcyones*, of which the first two, *H. cinnamomina* and *H. australasiæ*, approach *Syma* in style of coloration. The first of these two

species appears to differ wonderfully in plumage, some of the stages being given in the present work; but it is difficult to determine, in the present state of our knowledge, which is the very old bird; for they differ conspicuously even when all traces of young plumage have disappeared. The other subdivision of the cinnamon-coloured section contains three species, two of which have been long known to science, and have been made the types of the genera *Caridagrus* and *Astacophilus* of Messrs. Cabanis and Heine. The third species, *H. hombroni*, is at present only represented by the unique specimen in the Paris Museum. The next section contains several species, all of which seem to have two forms, a bright- and a dingy-coloured representative. Thus *H. juliæ* is the dull-coloured representative of *H. sacra*, *H. sordida* of *H. chloris*, and *H. vagans* of *H. sancta*. The habitats of these dark-coloured forms are always distinct; and I have therefore no hesitation in keeping them separate. Of the first section of this green group of the genus *Halcyon* there are two species, which have a very distinct superciliary cincture encircling the head. Of these *Halcyon sacra* is, as far as I can see, the Polynesian representative of *H. albicilla*; for in some stages of plumage, where the head gets white, they must be very hard to distinguish; yet the young are totally different, as will be seen by a reference to the Plates given in the 'Monograph.' *H. juliæ* is only a dark-coloured representative of *H. sacra*, and bears the same relation to that species that *H. sordida* does to *H. chloris* and *H. vagans* to *H. sancta*. The last-named birds call for little remark; and so we have only to notice the remaining species of the genus, which stands quite alone: this is *H. funebris*, readily to be distinguished by its dark brown (sometimes black) head and back.

Genus 12. Dacelo.

	Type.
Dacelo, Leach, Zool. Misc. ii. p. 125 (1815)	*D. gigas.*
Paralcyon, Gloger, Fror. Notiz. p. 278 (1827)	*D. gigas.*
Choucalcyon, Less. Traité d'Orn. p. 248 (1831)	*D. gigas.*
Nycticeyx, Gloger, Handb. d. Naturg. p. 338 (1842)	*D. gigas.*
Sauromarptis, Cab. & Heine, Mus. Hein. Th. ii. p. 163 (1860) . . .	*D. gaudichaudi.*

Clavis specierum.

a. Scapularibus brunneis.
  a'. Sexibus similibus: pileo medio rufescenti-brunneo, utrinque albido: cinctu nuchali brunneo . . . . . 1. *gigas.*
  b'. Sexibus dissimilibus, mari caudâ cyaneâ a feminâ (caudâ rufâ) distinguendo: pileo distinctè striato.
    a''. Subtùs albescens, fasciis parvis brunneis . . . . . 2. *leachi.*
    b''. Subtùs cervinæ.
      a'''. Pogonio externo rectricis extimi maris albo haud fasciato . 3. *cervina.*
      b'''. Pogonio externo rectricis extimi maris albo distinctè fasciato 4. *occidentalis.*
b. Scapularibus nigerrimis.
  a. Pileo nigro . . . . . 5. *gaudichaudi.*
  b. Pileo nigro ochraceo punctato . . . . . 6. *tyro.*

The genus *Dacelo* certainly does not stand in affinity close to *Halcyon*, for properly *Todiramphus* is the most nearly allied; but I have found it more convenient in the tabular classification to arrange them in the present order, and therefore keep to the arrangement. The present genus contains the largest members of the whole family of Kingfishers, some of them being so powerful as to prey on small Mammalia. It may be divided into two sections, the larger ones being the species of "Jackass," and the smaller ones exhibiting a certain affinity to *Caridonax* and *Halcyon*. Most of the *Dacelones* differ according to sex, the male always having a blue tail, and the female a brown one; but one species in each section differs from the general rule, and has the sexes similar.

Genus 13. Todirhamphus.

	Type.
Todirhamphus, Less. Mém. Soc. d'Hist. Nat. iii. p. 420 (1828) . . .	*T. veneratus.*
Coporhamphus, Gloger, Handb. Naturg. p. 338 (1842)	?

Clavis specierum.

a. Torque collari nullo	1. *veneratus.*
b. Torque collari lato.	
a''. Subtùs fulva	2. *recurvirostris.*
b''. Subtùs alba	3. *tutus.*

These species are all confined to the various groups of islands in the Pacific Ocean, and are very little known to ornithologists. *T. veneratus* stands alone; but *T. tutus* and *T. recurvirostris* are closely allied to species of *Halcyon*, the former to *H. sacra* and the latter to *H. sancta.* These birds the two above-mentioned *Todirhamphi* resemble very closely in plumage, and might easily be mistaken for them by a careless observer; but they are certainly specifically separable, and belong to totally distinct *genera.*

Genus 14. Monachalcyon.

	Type.
Monachalcyon, Reich. Handb. Alced. p. 37 (1851)	*M. monacha.*

Species unica.

M. monachus (Bonap. Consp. Gen. Av. p. 154, *ex* Forster, MS.).

In form of bill *Monachalcyon* seems intermediate between *Tanysiptera* and *Halcyon*, being in general appearance not far removed from the cinnamon group of *Halcyones*, while in the young plumage it very much resembles *Tanysiptera.* The difference between young and old birds of *Monachalcyon* is very curious.

Genus 15. Caridonax.

	Type.
Caridonax, Cab. & Heine, Mus. Hein. Th. ii. p. 162 (1860)	*C. fulgidus.*

Species unica.

C. fulgidus (Gould, P. Z. S. 1857, p. 65).

This, again, is a link between *Halcyon* and *Tanysiptera*, though more closely allied to the latter genus. The smoothness of the rounded culmen, the comparatively short bill, and long tail, however, are peculiar to this genus.

Genus 16. Carcineutes.

	Type.
Carcineutes, Cab. & Heine, Mus. Hein. Th. ii. p. 163 (1860)	*C. pulchellus.*
Lacedo (!!), Reich. Handb. Alced. i. p. 41 (1851)	*C. pulchellus.*

Clavis specierum.

a. Genis rufis	1. *pulchellus.*
b. Genis nigris	2. *melanops.*

This is a curious genus, as will be seen by a reference to the peculiar formation of the bill in the Plate of Genera (fig. 15). Its affinities are apparently between *Halcyon* and *Dacelo*; for while partaking somewhat of the character of the plumage of a *Halcyon*, it has the sexes different as in *Dacelo*, which it also resembles slightly in form of bill. The difference of the sexes, however, is pushed further than in *Dacelo*; for in the present genus the entire plumage of the female is red, and the predominating colour of the entire plumage of the male is blue, whereas in *Dacelo* this difference in colour holds good in most species, but only in the tail, which differs in colour, being blue in the male and rufous in the female.

Genus 17. Tanysiptera.

	Type.
Tanysiptera, Vig. Trans. Linn. Soc. xiv. p. 433 (1825)	*T. dea* (Linn.).
Uralcyon, Heine, J. f. O. 1859, p. 406	*T. sylvia.*

Clavis specierum.

A. Maculâ dorsali albâ.	
a. Subtùs cinnamomina	1. *sylvia.*
b. Subtùs albæ.	
a'. Scapularibus saturatè ultramarinis: tectricibus supracaudalibus cum rectricibus cæruleo marginatis	2. *doris.*
b'. Similis *T. doridi*, sed paullo major: pileo argenteo-cyaneo: rectricibus cyaneo angustissimè marginatis	3. *emiliæ.*
c'. Scapularibus nigris, ultramarino clarè lavatis: tectricibus supracaudalibus cum rectricibus albis	4. *sabrina.*
B. Maculâ dorsali nullâ.	
a. Uropygio coccineo	5. *nympha*
b. Uropygio albo.	
a'. Caudâ haud spatulatâ	6. *ellioti.*
b'. Caudâ spatulatâ.	

a''. Genis, regione paroticâ et collo postico nigris.
a'''. Rectricibus exterioribus nigris, cæruleo marginatis . . . 7. *hydrocharis*.
b'''. Rectricibus exterioribus albis, cæruleo marginatis . . . . 8. *acis*.
b''. Genis, regione paroticâ et collo postico saturatè cæruleis.
a'''. Pileo ultramarino: superciliis cum nuchâ cyaneis: tectricibus caudalibus postremis nigris . . . . . 9. *margarethæ*.
b'''. Pileo concolori: tectricibus caudalibus omnino albis.
a''''. Dorso cyaneo maculato . . . . . 10. *nais*.
b''''. Dorso concolori . . . . . 11. *galatea*.
c''. Genis, regione paroticâ et collo postico viridi-cyaneis . . . . 12. *riedeli*.

It is to be regretted that the *Alcedo dea* of Linnæus, the type of this genus, is not recognizable; and I have therefore left the name out of the question as tending only to confuse. The locality given by Seba and the older authors as the habitat, Ternate, is now known not to contain a species of *Tanysiptera*. Professor Schlegel and I differ in our estimate of the value of the species recognized by me, as he is inclined to consider them variations of one type, while I regard them as good species, seeing that the characters of each are permanent, and the geographical range of each peculiar to the species itself.

Genus 18. Cittura.

Type.
Cittura, Kaup, Fam. Eisv. p. 8 (1848) . . . . . *C. cyanotis*.

Clavis specierum.

a. Plumis superciliaribus pallidè lilacino-rubentibus . . . . . 1. *cyanotis*.
b. Plumis superciliaribus albo terminatis . . . . . 2. *sanghirensis*.

The genus *Cittura* has a remarkable bill, which is grooved along the culmen, as repre-presented in the Plate (fig. 16). Whether the beautiful *C. sanghirensis* is really a distinct species, or whether it is only the breeding-plumage of the ordinary *C. cyanotis*, remains to be seen; but that it is not confined to Sanghir is certain, from the fact of my having received it from Celebes on two different occasions. Mr. Renesse van Duivenbode also sent me a note to say that *C. cyanotis* varied much with the season of the year. Against the probability of the two species being identical must be mentioned the larger bill, black forehead, and white-tipped eyebrow, all of them conspicuous characters in *C. sanghirensis*.

Genus 19. Melidora.

Type.
Melidora, Less. Traité d'Orn. p. 249 (1831) . . . . . *M. macrorhyncha*.

Species unica.

M. macrorhyncha (Less. Voy. Coq. i. p. 692).

In this genus we have the extreme type of the *Daceloninæ*; and we have seen the bill, as the birds became more and more insectivorous, gradually go through various modifications, becoming more and more depressed, until in the present genus the groove, which was appa-

rent in the culmen of *Cittura*, is here more strongly developed, while the apex of the bill is furnished with a hook, which doubtless subserves some useful purpose in procuring food, with which we are at present unacquainted.

GEOGRAPHICAL DISTRIBUTION.

Genus 1. Alcedo.

Range of the Genus.

Over the greater part of the Old World, but does not extend into the Australasian Region proper—the furthest authentic range of an *Alcedo* being, so far as we know, into the Austro-Malayan subregion to New Guinea.

Range of the Species.

1. *Alcedo ispida.* Over the whole of the Western Palæarctic Region, but of rarer occurrence in the north. Found in Northern Africa, and extends into Egypt and Palestine. Its range to the east is undetermined; but it is probably replaced throughout the Eastern Palæarctic Region from Persia and Central Asia, by the next species.

2. *Alcedo bengalensis.* The representative of *A. ispida*, which it replaces in the east. It has been found to the westward as far as North-eastern Africa, having been met with in Egypt and the Sinaitic peninsula. Its eastern range extends over the whole of the Indian Region and into the Eastern Palæarctic as far as Amoorland and Japan; but its extent in this quarter is not yet satisfactorily determined. It is also found distributed over the whole of the Indo-Malayan and Indo-Chinese subregions, and extends into the Austro-Malayan as far as Gilolo, where, however, it can only be a rare and occasional visitant.

3. *Alcedo grandis.* The largest species of *Alcedo* yet discovered. As yet it has been only obtained in the Terai, below Darjiling.

4. *Alcedo moluccensis.* Although belonging to the same section of the genus *Alcedo* as the foregoing, its nearest ally is *Alcedo bengalensis*, which it replaces in the Moluccas, where it is generally distributed, though, as far as we yet know, it is confined to the Austro-Malayan subregion*.

5. *Alcedo quadribrachys.* Confined to the Ethiopian Region, principally to the west coast, but has been known to occur in Natal once. Not yet met with in North-eastern Africa.

6. *Alcedo asiatica.* Generally distributed over the Indo-Malayan subregion, extending into the eastern part of India proper, and also into Cochin China. Found likewise in Celebes.

7. *Alcedo semitorquata.* Confined to the Ethiopian Region, over the whole of which it is distributed, but is more common in South Africa.

* The locality, "Flores" (*Wallace*), given in my account of this species should be expunged from the list of habitats, as I afterwards discovered that the bird brought by Mr. Wallace from this island was not the true *A. moluccensis*, but the bright race of *A. bengalensis*, named by Reichenbach *A. sondaica*.

8. *Alcedo euryzona.* A very rare species, the young and old birds differing conspicuously. Entirely confined to the Indo-Malayan subregion.

9. *Alcedo beryllina.* A small species—indeed, the least of the genus. Confined to the southern islands of the Malayan subregion, where its range appears limited to Java and the small islands running to the eastward.

The subjoined Table will give the best idea of the geographical distribution of the genus *Alcedo*. There are four groups in this genus, in connexion with which fact some interesting points will be noticed:—1st, the four species of the *Alcedo ispida* group, which are distributed over nearly the whole of the Old World, but do not extend into the Australian Region proper, where their place is taken by species of *Alcyone*; nor do they range into the Ethiopian Region beyond a very narrow limit in North-eastern Africa; 2nd, the species of the *Alcedo asiatica* group, of which there are two, one confined to the Indo-Malayan subregion, while the other occurs in Africa, no intermediate form being met with in the countries between. Were it not for the fact that M. Jules Verreaux tells me he has shot the African species in Natal, its range would be almost identical with that of *Halcyon badia*—another Kingfisher, of an Indian group, exclusively confined to a limited portion of Western Africa; 3rd, the single species *Alcedo semitorquata*, which is confined to the Ethiopian Region, where it seems to represent *Alcedo bengalensis*, as its range commences where that of the latter leaves off, and extends throughout the length and breadth of the African continent; and, 4th, the species of the *Alcedo beryllina* group, of which there are two, *A. euryzona* and *A. beryllina*. Both of these have white bellies with blue bands across the breast; both are confined to the Indo-Malayan subregion; both occur in Java, whence their ranges diverge—the one along the Malayan peninsula, the other to the small islands running to the east of Java, thus extending into the Austro-Malayan subregion.

Table of the Geographical Distribution of the Genus Alcedo.

	Palæarctic Region.								Ethiopian Region.				Indian Region.							Australasian Region.												
													Asia.	Indo-Malay Islands.						Celebes.	Timor Group.			Moluccan Group.				Papuan Islands.			
	Northern Europe.	Southern Europe.	N. Africa.	Egypt.	Palestine.	Central Asia.	Siberia.	Japan.	N.-E. Africa.	West Africa.	South Africa.	East Africa.	Indian Asia.	Chinese Asia.	Malaccea and Singapore.	Sumatra.	Java.	Bangka.	Borneo.	Philippines.	Celebes.	Sula Islands.	Lombock.	Flores.	Timor.	Batchian.	Gilolo.	Bouru.	Ceram and Amboina.	Mysol.	New Guinea and Salawatty.	New Ireland.
1. A. ispida	*	*	*	*	*																											
2. A. bengalensis				*		*	*	*	*				*	*	*		*		*	*				*	*		*				
3. A. grandis													*																			
4. A. moluccensis																					*					*	*	*	*	*	*	*
5. A. quadribrachys										*	*										*											
6. A. asiatica													*		*	*	*	*	*		*		*									
7. A. semitorquata									*	*	*	*																				
8. A. euryzona															*	*	*		*													
9. A. beryllina																	*						*		*							

From the foregoing Table it appears:—

1. That the genus *Alcedo* is not represented in the Nearctic and Neotropical Regions, nor in the Australian Region proper.

2. That the Palæarctic Region has one peculiar species, while one Indian species just reaches its north-eastern limit.

3. That the Ethiopian Region has two peculiar species, while one Indian species just reaches its north-eastern limit.

4. That the Indian Region has one peculiar species. Three others, which have their maximum range within its limits, wander slightly beyond the boundaries, and therefore cannot be called peculiar to the region.

5. That the Australian Region, or, more properly speaking, the Austro-Malayan subregion, has one peculiar species.

Genus 2. Corythornis.

Range of the Genus.

Strictly confined to the Ethiopian Region.

Range of the Species.

1. *C. cristata.* Found only in Madagascar and the adjacent islands.

2. *C. cyanostigma.* A bird of wide distribution over the entire African continent, but not extending to the Mascarene subregion, where it is replaced by *C. cristata.*

3. *C. galerita.* Confined to the west coast of Africa. Wherever it is found it appears that *C. cyanostigma* also occurs, with the exception of the islands in the Bight of Biafra, where *C. galerita* is found, but where *C. cyanostigma* has been only doubtfully met with.

Table of the Geographical Distribution of the Genus Corythornis.

	Ethiopian Region.																								
	North-east Africa.				East Africa.	South Africa.				West Africa.											Madagascar.				
	Abyssinia.	Bogos Land.	White Nile.	Blue Nile.	Zambesi.	Transvaal.	Natal.	Caffraria.	Cape Colony.	Angola.	Gaboon.	St. Thomas.	Princes Islands.	Bonny River.	Ashantee.	Fantee.	Gold Coast.	Bissao.	Casamanze.	Senegambia.	Madagascar.	Nossi-bé.	Nossi-Falie.	Tani-kely.	Nossi-Bourah.
1. C. cristata	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	*	*	*	*
2. C. cyanostigma	*	*	*	*	*	*	*	*	*	*	*	*	..	*	*	*	*	*	*	*					
3. C. galerita	...	...	...	...	.....	...	...	...	...	*	...	*	*												

Genus 3. Alcyone.

Range of the Genus.

Over the Australian continent, and throughout the Papuan Islands and Austro-Malayan

subregion generally, extending to the Philippine Islands, where an aberrant form occurs. It is doubtful whether the Philippine species of *Alcyone* really does not belong to *Ceyx*, so that true *Alcyone* may be said to be confined to the Australian Region.

Range of the Species.

1. *A. azurea.* Spread over the entire Australian continent.

2. *A. pulchra.* Coexistent with *A. azurea* in the northern portion of Australia, and perhaps replacing it to the north-west.

3. *A. diemenensis.* The representative of *A. azurea* in Tasmania.

4. *A. lessoni.* Inhabits New Guinea and the Aru Islands.

5. *A. affinis.* The representative of *A. lessoni* in Batchian and Gilolo.

6. *A. pusilla.* The smallest species of the genus, inhabiting the northern portion of Australia, extending over the Papuan Islands as far north as Gilolo.

7. *A. cyanopectus.* Confined to the Philippine Islands; but the precise locality is unknown.

Table of the Geographical Distribution of the Genus Alcyone.

	Indian Region.	Australasian Region.						
		Moluccan Group.		Papuan Group.		Australia.		
	Philippines.	Batchian.	Gilolo.	New Guinea.	Aru Islands.	Australia generally.	North Australia.	Van Diemen's Land.
1. A. azurea						*	*	
2. A. pulchra							*	
3. A. diemenensis								*
4. A. affinis		*	*					
5. A. lessoni				*	*			
6. A. pusilla			*	*	*		*	
7. A. cyanopectus	*							

Genus 4. Ceryle.

Range of the Genus.

Over the whole of the New World, where it is the only form of Kingfisher. In the Old World it ranges over the whole of the Ethiopian and Indian Regions, extending within the limits of the Palearctic Region in the south and north-east only. Does not extend into the Australian Region at all.

The various groups, each of which possesses a peculiar style of plumage, as pointed out (*anteà*, p. viii), have all been separated into distinct genera at one time or another; and it may be useful to make use of these divisions in the present instance, as geographical peculiarities are exemplified by some of the divisions of the genus here indicated.

Range of the Species.

a. *Megaceryle.*

1. *C. guttata.* Confined to the Himalayan subregion. Its extent to the eastward not yet determined, but probably extending into China.

2. *C. lugubris.* Confined to Japan. Although treated as a separate species in the 'Monograph,' ornithologists must not consider it more than a local race of rather larger size than *C. guttata*, and should a large Pied Kingfisher be discovered in China, intermediate forms will doubtless be found to connect the two races.

b. *Ceryle.*

3. *C. rudis.* Found throughout the Ethiopian and Indian Region proper, visiting the south and south-east of Europe.

c. *Ichthynomus.*

4. *C. maxima.* Found all over the Ethiopian Region.

5. *C. sharpei.* A small form of *C. maxima*, but presenting apparently good specific characters. At present known only from Gaboon and Congo.

d. *Streptoceryle.*

6. *C. torquata.* Over the whole of the Neotropical Region, excepting the southern portion, where its place is taken by *C. stellata.* It ranges as far north as Mexico.

7. *C. stellata.* The representative of the foregoing bird in the southern part of the Neotropical Region. It can be scarcely considered more than a local race.

8. *C. alcyon.* Replaces *C. torquata* all over North America, extending southwards as far as Panama and the Antilles.

e. *Chloroceryle.*

9. *C. amazonia.* Widely extended throughout the Neotropical Region, extending as far north as Mexico, and as far south as La Plata.

10. *C. americana.* Coexistent with the former over the Neotropical Region south of the Isthmus of Panama, but replaced by the next species along the western coast of the South-American continent.

11. *C. cabanisi.* The representative of *C. americana* along the western side of South America and through Central America as far north as Texas.

f. *Amazonis.*

12. *C. inda.* Over the greater part of the Neotropical Region, but not the south. Found also in Central America as far north as Nicaragua.

Table of the Geographical Distribution of the Genus Ceryle.

| | Nearctic Region. | | Neotropical Region. | | | | Palæarctic Region. | | | | | | | | | | | | | | Indian Region. | | | | Ethiopian Region. | | | | | | | | | | | | | |

13. *C. superciliosa.* Coexistent with the former bird in the Neotropical Region and Central America, perhaps extending its range a little further north than that bird.

Thus it will be seen that these subgenera have each a peculiar range—*Megaceryle* found only in the Himalayan subregion and Japan, true *Ceryle* in the Ethiopian and Indian Regions, *Ichthynomus* peculiar to Africa, and *Streptoceryle*, *Chloroceryle* and *Amazonis* to America.

Genus 5. Pelargopsis.

Range of the Genus.

Over the entire Indian Region, extending to Celebes and Flores within the limits of the Australian Region. To this latter Region two species are peculiar, while the other seven are characteristic of the Indian Region.

Range of the Species.

a. *Hylcaon.*

1. *P. melanorhyncha.* Stands alone from all the rest of the genus by reason of its black bill. Confined to Celebes and the Sula Islands.

b. *Pelargopsis.*

2. *P. amauroptera.* Found in Eastern India, extending into Assam, Arakan, and the Tenasserim Provinces.
3. *P. leucocephala.* Confined to Borneo.
4. *P. gouldi.* Representative of the foregoing in the Philippines.
5. *P. fraseri.* Found in Malacca, Java, and Sumatra. In this latter island the form slightly varies.
6. *P. gurial.* All over India and Ceylon, extending into Assam and Nepaul, where perhaps a slight difference occurs; but having seen additional examples from these localities since I wrote my paper on the genus (P. Z. S. 1870, p. 61), I am inclined to believe that there is not any difference of importance, though the cap seemed to be a little lighter in the specimen I had before me at the time.
7. *P. malaccensis.* Representing the foregoing in Malacca.
8. *P. burmanica.* Representative of *P. gurial* in Burmah, Siam, and the Andamans.
9. *P. floresiana.* Represents *P. gurial* in Flores.

Table of the Geographical Distribution of the Genus Pelargopsis.

	Indian Region.													Australian Region.				
	Indian Asia.				Chinese Asia.					Indo-Malay Islands.				Celebes.		Timor Group.		
	India.	Ceylon.	Nepaul.	Assam.	Arakan.	Andaman Isl.	Burmah.	Siam.	Tenasserim pr.	Malacca and Singapore.	Sumatra.	Java.	Borneo.	Philippines.	Celebes.	Sula Islands.	Lombok.	Flores.	Timor.
1. P. melanorhyncha															*	*			
2. P. amauroptera	*			*	*				*										
3. P. gouldi														*					
4. P. leucocephala													*						
5. P. fraseri										*		*							
a. Sumatran race											*								
6. P. gurial	*	*																	
a. Assamese race			*	*															
7. P. malaccensis										*									
8. P. burmanica						*	*	*											
9. P. floresiana																		*	

Genus 6. Ceyx.

Range of the Genus.

Over the greater part of the entire Indian Region, over the whole of the Indo-Malayan and Austro-Malayan subregions as far as New Guinea.

Range of the Species.

1. *C. rufidorsa.* Spread over the greater part of the Indo-Malayan subregion and extending its range within the limits of the Austro-Malayan to the islands of Lombock and Flores.

2. *C. sharpei.* Confined to Borneo, where it probably represents *C. rufidorsa*, which is rare there.

3. *C. dillwynni.* Confined to Labuan and Borneo. It was discovered in the former island, but has since been obtained at Banjermassing, in Borneo.

4. *C. melanura.* Only found in the Philippine Islands.

5. *C. tridactyla.* Spread over India and Ceylon, extending into Nepaul and down the Malayan peninsula into the adjacent islands; also found in the Philippines.

6. *C. cajeli.* Confined to Bouru.

7. *C. wallacei.* Confined to the Sula Islands.

8. *C. lepida.* Commonly found in New Guinea, but has been sent from Ceram and Amboina.

9. *C. uropygialis.* The representative of the foregoing bird in Batchian, Gilolo and Ternate.

10. *C. solitaria.* Principally found in New Guinea, but also sent from Ceram.

11. *C. philippinensis.* Confined to the Philippines.

There are four groups of the genus *Ceyx*, as follows:—1. The *C. tridactyla* group, with red bills and lilac plumage. 2. *C. lepida* group, with red bills but blue plumage. 3. *C. solitaria*, with a black bill. 4. *C. philippinensis*, with a blackish upper and orange lower mandible. Of these four different forms, the first group is typical of the Indian Region, scarcely reaching into the Australian, where the second group takes its place, the third group, containing only one species, is almost confined to the Papuan Islands, while the fourth, represented by one species also, is confined to the Philippines, where it forms the link between the genera *Ceyx* and *Alcyone*.

Table of the Geographical Distribution of the Genera Ceyx *and* Ceycopsis.

	Indian Region.									Australian Region.													
	Asia.	Indo-Malay Islands.								Celebes.		Timor Group.			Moluccan Group.						Papuan Islands.		
	Indian Asia.	Malacca and Singapore.	Sumatra.	Bangka.	Bawian.	Java.	Borneo.	Labuan.	Philippines.	Celebes.	Sula Islands.	Lombock.	Sumbawa.	Flores.	Batchian.	Gilolo.	Ternate.	Bouru.	Ceram.	Amboina.	Aru Islands.	Mysol.	New Guinea.
Ceyx.																							
1. C. rufidorsa		*	*	*	*	*	*	...	...			*	*	*									
2. C. sharpei		...	...	...	...	...	*																
3. C. dillwynni		...	...	...	...	...	*	*															
4. C. melanura		...	...	...	...	...	...	...	*														
5. C. tridactyla	*	*	*	...	...	*	...	...	*														
6. C. cajeli		...	...	...	...	...	...	...	...						...	...	...	*					
7. C. wallacei		...	...	...	...	...	...	...	...		*												
8. C. lepida		...	..	...	...	...	...	...	...						...	...	...	...	*	*	.....	.....	*
9. C. uropygialis		...	...	...	...	...	...	...	...						*	*	*						
10. C. solitaria		...	...	...	...	...	...	...	...						...	...	...	...	*	...	*	*	*
11. C. philippinensis		...	...	...	...	...	...	...	*														
Ceycopsis.																							
1. C. fallax		...	...	...	...	...	...	...	...	*													

Genus 7. Ceycopsis.

Range of the Genus.

Confined to the island of Celebes, where it represents true *Ceyx*, no species of which has yet been discovered on the island. Only one species of *Ceycopsis* exists up to the present time.

Genus 8. Myioceyx.

Range of the Genus.

Confined to the west coast of Africa, on the countries bordering the Bight of Biafra.

Range of the Species.

1. *M. ruficeps.* Hitherto only known from Aguapim and Fantee, countries of the Gold Coast.

2. *M. lecontei.* The only specimen known was sent by Du Chaillu from the Moonda River, Gaboon.

Genus 9. Ispidina.

Range of the Genus.

This is one of the typical genera of the Ethiopian Region, over the whole of which, as well as Madagascar, it is distributed.

Range of the Species.

1. *I. picta.* Found in North-eastern Africa, and the whole of Western Africa from Senegambia to Angola.

2. *I. natalensis.* The representative of the foregoing in Eastern and South-eastern Africa.

3. *I. leucogastra.* The largest African species, found, but rarely, from Sierra Leone down to Gaboon.

4. *I. madagascariensis.* Confined to the forest-region of Madagascar. By no means a typical species, and exhibits great affinity towards *Ceyx* and *Ceycopsis*.

Table of the Geographical Range of the Genera Myioceyx *and* Ispidina.

	Ethiopian Region.																					
	North-east Africa.				East Africa.		South Africa.		West Africa.													
	Abyssinia.	Senaar.	Bogosland.	Gazelle River.	Mosambique.	Zambesi.	Natal.	Caffraria.	Angola.	Malimba.	Gaboon.	Fernando Po.	Calabar.	Fantee.	Ashantee.	Aguapim.	Gold Coast.	Sierra Leone.	Casamanze.	Senegambia.	Madagascar.
Myioceyx.																						
1. M. ruficeps	...	...	...	...	.....	.....	...	...	...	...	...	...	...	*	...	*	...	...	...	...	...	
2. M. lecontei	...	...	...	...	.....	.....	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	
Ispidina.																						
1. I. picta	*	*	*	*	.....	.....	...	...	*	*	*	...	*	...	...	...	*	...	*	*	...	
2. I. natalensis	...	...	...	...	*	*	*	*	...	...	...	...	...	...	...	...	...	...	...	...	...	
3. I. leucogastra	...	...	...	...	.....	.....	...	...	...	...	*	*	...	*	*	...	*	*	...	...	...	
4. I. madagascariensis	...	...	...	...	.....	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	

Genus 10. Syma.

Range of the Genus.

Confined to the Australian Region, being only found in Northern Australia and the Papuan Islands.

Range of the Species.

1. *S. torotoro.* Only found as yet in New Guinea, the Aru Islands, Waigiou, and Mysol.

2. *S. flavirostris.* Represents the foregoing in Australia, where it is confined to the Cape-York Peninsula.

Genus 11. Halcyon.

Range of the Genus.

Over the whole of the Ethiopian, Indian, and Australian Regions, and extending within the limits of the Palæarctic Region by reason of the occurrence of a species in Japan and another in South-eastern Europe.

Range of the Species.

1. *H. coromanda.* This species has two or three subspecies, which differ from the typical form in size and in intensity of coloration. The Ruddy Kingfishers in their different allied forms range over the whole of the Indo-Malayan subregion, and occur in Japan and Celebes. The Kingfisher of Japan has been named *H. schlegeli* by Bonaparte, and is a little larger than typical *H. coromanda*. Again, the form found in Celebes is still a little larger than the Japanese subspecies, and is much brighter in colour. The three subspecies seem, however, to run one into the other, so that I have not treated them as distinct species.

2. *H. badia.* This is a small species of the chestnut-coloured group of *Halcyon*, to which belong also the two succeeding species. It is confined to the west Coast of Africa, being found as far north as Sierra Leone, southwards to the Gaboon. Since the species was described in my Monograph, I have received it from Governor Ussher in Fantee.

3. *H. smyrnensis.* Widely distributed, and ranging throughout the Indian Region, not extending, however, beyond the Malayan Peninsula. Occurs also on the Red Sea and in Syria and Palestine, even to Asia Minor.

4. *H. gularis.* The representative of the foregoing species in the Philippines, where, it seems, *H. smyrnensis* also occurs.

5. *H. cyanoventris.* Confined to the island of Java.

6. *H. pileata.* Spread over but confined to the entire Indian Region.

7. *H. erythrogastra.* Confined to the Cape-Verde Islands, where it represents the next species.

8. *H. semicærulea.* Found all over the northern part of the Ethiopian Region, and southwards along the western coast to Ovampoland. Some ornithologists, like M. Jules Verreaux, whose experience carries great weight, maintain that this species and the foregoing are not separable, as, however different West-African specimens may be from those of the Cape-Verde Islands, Abyssinian ones are intermediate; so that perhaps I was wrong in separating the two forms. Certain it is that the colouring of the plate of *H. erythrogastra* makes it impossible to appreciate the difference in the species; for the Dutch colourists have made the shading of the head so sharp and of such a dark colour, as to give the bird the appear-

Table of the Geographical Distribution

| | Palæarctic Region. | | | | | Indian Region. | | | | | | | | | | | Australian Region. | | | | | | | | | | |

the Genera Halcyon, Syma, *and* Todirhamphus.

| Australasian Region. | | |

ance of a white eyebrow. This does not exist, as the species, like *H. semicærulea*, has the head pure white; and the careful way in which the English colourists have rendered the plate of the latter bird makes the faulty colouring of that of *H. erythrogastra* the more conspicuous.

9. *H. senegaloides.* Confined to the coast-line of South-eastern Africa, being found only in Natal and Southern Mozambique.

10. *H. albiventris.* Confined to South Africa, ranging into Natal.

11. *H. orientalis.* Replaces the former bird along the east coast in the Zambesi region and Mosambique.

12. *H. chelicutensis.* Found all over the Ethiopian Region, those from the south being the largest.

13. *H. cyanoleuca.* Ranges all over the west coast of Africa and into South Africa, but appears not to extend into North-eastern Africa.

14. *H. senegalensis.* Coexistent with the former species in Western Africa, but does not extend below Benguela, where its place is taken by *H. cyanoleuca.* It replaces, however, the last-named bird in North-eastern Africa, where *H. cyanoleuca* has not yet been met with.

15. *H. dryas.* Found only along the west coast of Africa, in the countries and islands bordering the Bight of Biafra, from Fantee to Gaboon.

16. *H. malimbica.* Coexistent with the former on the Gold Coast, but of wider distribution, extending northwards to Senegambia, and southwards into Angola. Said to occur in Natal; but this seems doubtful.

17. *H. albicilla.* Confined to the Austro-Malayan subregion.

18. *H. leucopygia.* Confined to the Solomon Islands.

19. *H. nigro-cyanea.* Confined to New Guinea.

20. *H. lazuli.* Found only in Ceram and Amboina.

21. *H. diops.* Replaces the former in Batchian, Gilolo, and Ternate.

22. *H. macleayi.* North and North-eastern Australia, as far south as Clarence River, and in Lizard Island, Torres Strait.

23. *H. pyrrhopygia.* Central Australia only.

24. *H. cinnamomina.* Found only in the Austro-Malayan subregion.

25. *H. australasiæ.* A small representative of the foregoing, which it replaces in Timor and Lombock, to which two islands it is confined.

26. *H. lindsayi.* Confined to the Philippines, and, as far as is at present known, to the island of Luzon.

27. *H. concreta.* Only found in the Indo-Malayan subregion.

28. *H. hombroni.* Allied to the last, which it replaces in Mindanao.

29. *H. sacra.* The representative apparently of *H. albicilla* in Oceania. So far as is reliably known, it is an inhabitant of the Figi, Friendly, and Samoa groups of islands.

30. *H. juliæ.* A dark-coloured representative of *H. sacra*, which it replaces in the New-Hebrides group.

31. *H. chloris.* A very wide-spread species, occurring in North-eastern Africa* and over the whole of the Indian Region, and all over the Austro-Malayan subregion as far as New Guinea, and even extends to the Solomon Islands.

32. *H. sordida.* Replaces the foregoing species in North Australia, and is coexistent with it in New Guinea and the Aru Islands.

33. *H. forsteni.* Confined to the Island of Celebes.

34. *H. sancta.* Spread over the greater part of the Australian Region, and ranging into the Indo-Malayan subregion.

35. *H. vagans.* Represents *H. sancta* in New Zealand.

36. *H. funebris.* Confined to Gilolo.

Genus 12. Todirhamphus.

However exacting the claims of a recognizable classification may have been in our previous chapter, it would be out of all question to separate *Todirhamphus* from *Halcyon* in a consideration of the geographical relations of the two genera; and I have therefore transposed *Dacelo* and *Todirhamphus* in the present article, for the sake of a clearer understanding.

Range of the Genus.

Restricted to Oceania.

Range of the Species.

1. *T. veneratus.* Confined to the Society Islands.

2. *T. recurvirostris.* Confined to the Samoan Islands, where it appears to represent *Halcyon sancta.*

3. *T. tutus.* Confined to the Society and Marquesas Islands, where it appears to represent *Halcyon sacra.*

Genus 13. Dacelo.

Range of the Genus.

Over the continent of Australia, and northwards into the Austro-Malayan subregion. There are two distinct groups of this genus:—the true *Dacelo*, of which the Laughing Jackass is the type; and a smaller group, which has been named *Sauromarptis* by Cabanis and Heine. The former of these two groups is confined to Australia, the latter replacing it in the Papuan Islands.

Range of the Species.

1. *D. gigas.* South-eastern Australia, from New South Wales as far north as Southern Queensland.

2. *D. leachi.* The representative of the foregoing species in Queensland.

3. *D. cervina.* The representative of the foregoing in Northern Australia.

* By an oversight I have omitted to include this bird in my list of African Kingfishers (Ibis, 1869, p. 275), and, again, have not referred to the very elaborate article in the 'Vögel Ost-Afrika's,' by Drs. Finsch and Hartlaub, p. 165.

4. *D. occidentalis.* The representative of the foregoing in North-western Australia.
5. *D. gaudichaudi.* Confined to the Papuan Islands and Ceram.
6. *D. tyro.* Represents the foregoing species in the Aru Islands.

Genus 14. Monachalcyon.

Range of the Genus.

Confined to Celebes. There is only one species.

Genus 15. Caridonax.

Range of the Genus.

Confined to the islands of Lombock and Flores. Only one species is known.

Genus 16. Carcineutes.

Range of the Genus.

Confined to the Indo-Malayan subregion.

Range of the Species.

1. *C. pulchellus.* Extends from Java and Sumatra, along the Malayan peninsula as far north as the Tenasserim Provinces and Siam, from which latter locality I have lately seen a specimen in Mr. Gould's collection.
2. *C. melanops.* Only found in Borneo.

Genus 17. Tanysiptera.

Range of the Genus.

Confined to the Australian region.

Range of the Species.

1. *T. sylvia.* Inhabits New Guinea, whence it migrates into Northern Australia.
2. *T. doris.* Confined to Morty Island.
3. *T. emiliæ.* Represents the foregoing in Raou.
4. *T. sabrina.* Confined to Kaioa.
5. *T. nympha.* Confined to New Guinea.
6. *T. ellioti.* Confined to Mysol.
7. *T. hydrocharis.* Confined to the Aru Islands.
8. *T. acis.* Confined to Bouru.
9. *T. margarethæ.* Confined to Batchian and Gilolo.
10. *T. nais.* Confined to Amboina and Ceram.
11. *T. galatea.* Replaces *T. nais* in Waigiou and New Guinea.
12. *T. riedeli.* Supposed to be found in Celebes; but further confirmation is necessary.

Genus 18. Cittura.

Range of the Genus.

Restricted to Celebes and Sanghir.

1. *C. cyanotis.* Only found in Northern Celebes.
2. *C. sanghirensis.* Represents the foregoing in Sanghir, but is also found in Celebes.

Genus 19. Melidora.

Range of the Genus.

Found only in New Guinea; and as yet only one species is known.

Table of the Geographical Distribution of the Genus Dacelo *and its allies.*

	Indian Region.							Australian Region.																							
	Asia.		Indo-Malay Islands.					Celebes.		Timor Group.			Moluccan Group.							Papuan Group.				Australia.							
	Siam.	Tenasserim.	Malacca.	Sumatra.	Java.	Borneo.	Philippines.	Celebes.	Sanghir.	Lombock.	Flores.	Timor.	Batchian.	Gilolo.	Kaioa.	Morty Island.	Raou.	Bouru.	Ceram.	Amboina.	Aru Islands.	Mysol.	Waigiou.	New Guinea.	N. S. Wales.	S. Australia.	N. E. Australia.	N. Australia.	N. W. Australia.		
Dacelo.																															
1. D. gigas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	*	...	...	...	...	...	
2. D. leachi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	
3. D. cervina	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	
4. D. occidentalis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	
5. D. gaudichaudi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	*	*	*	...	...	...	...	*	...	
6. D. tyro	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	
Monachalcyon.																															
1. M. princeps	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Caridonax.																															
1. C. fulgidus	...	...	...	...	...	...	...	...	...	*	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Carcineutes.																															
1. C. pulchellus	*	*	*	*	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2. C. melanops	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tanysiptera.																															
1. T. sylvia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	*	...	...	
2. T. doris	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3. T. emiliæ	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...	
4. T. sabrina	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5. T. nympha	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	
6. T. ellioti	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	
7. T. hydrocharis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	
8. T. acis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	
9. T. margarethæ	...	...	...	...	...	...	...	...	...	...	...	...	*	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10. T. nais	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	*	...	...	...	...	...	...	...	...	...	...	
11. T. galatea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	*	...	...	...	...	...	...	
12. T. riedeli	...	...	...	...	...	...	...	*?	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Cittura.																															
1. C. cyanotis	...	...	...	...	...	...	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2. C. sanghirensis	...	...	...	...	...	...	...	*	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Melidora.																															
1. M. macrorhyncha	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*	...	...	...	...	...	...	

It will be seen that in the foregoing pages I have mainly followed Dr. Sclater's scheme of geographical distribution, with Mr. Wallace's subdivisions of the Indian and Australian Regions. It may, therefore, be interesting to compare the results obtained from a careful study of the geographical distribution of the *Alcedinidæ*, and to see how the facts coincide with the above-mentioned scheme, and I will place these results before my readers as concisely as possible.

Dividing the surface of the globe, therefore, into the two divisions, *Neogæa* (New World) and *Palæogæa* (Old World), we find that the former possesses no genus peculiar to itself, and only eight species. These latter, it is true, are distinct enough in themselves; but they all belong generically to *Ceryle*, a widespread form of Kingfisher in the Old World. Thus the Kingfishers of the earth may be summarized:—

Neogæa. Peculiar genera, 0; peculiar species, 8.

Palæogæa. Peculiar genera, 18; peculiar species, 117.

Genera common to both divisions, 1, viz. *Ceryle*.

Species common to both divisions, 0*.

In Neogæa we find that the genus *Ceryle* is thus distributed:—

Nearctic Region. Peculiar species, one, viz. *Ceryle alcyon*.

Neotropical Region. Peculiar species, six, viz. *Ceryle torquata*, *C. stellata*, *C. amazonia*, *C. americana*, *C. inda*, *C. superciliosa*.

Ceryle alcyon, in winter, ranges into Central America, while *C. cabanisi*, though having its maximum range in South America, ranges as far north as Texas, and therefore may be said to be common to both regions.

In Palæogæa the distribution of Kingfishers will be found to be as follows:—

Palæarctic Region. Peculiar genera, 0; peculiar species, 2.

Ethiopian Region. Peculiar genera, 3; peculiar species, 24.

Indian Region. Peculiar genus, 1; peculiar species, 25.

Australian Region. Peculiar genera, 10; peculiar species, 59.

The genera not included in the above list are—

1. *Alcedo*. Common to the Palæarctic, Ethiopian, and Indian Regions, but entering the limits of the Australian.

2. *Ceryle*. Common to the Palæarctic, Indian, and Ethiopian Regions, but entirely absent in the Australian.

3. *Pelargopsis*. An Indian genus, but having two species peculiar to the Australian region.

4. *Ceyx*. Found equally in the Indian Region and the Austro-Malayan subregion.

5. *Halcyon*. Spread over the whole of the Old World, excepting the Palæarctic Region, into the limits of which it intrudes only on the south-west and north-east.

The Alcedinine peculiarities of each respective region may be analyzed as follows:—

1. Palæarctic Region.—No peculiar genera. Peculiar species: 1. *Alcedo ispida*; 2. *Ceryle lugubris*.

* *Ceryle alcyon* has once occurred in Europe, but cannot be said to be common to both the Old and New Worlds.

Dr. Sclater includes Japan within the limits of his Palæarctic Region, and the majority of facts confirm the correctness of this view; but the *Alcedinidæ* are decidedly Indian; for *Alcedo bengalensis* is a truly Indian species, and *Halcyon schlegeli* and *Ceryle lugubris* are identical with Himalayan species, excepting that they are a little larger in size.

2. Ethiopian Region.—Peculiar genera: 1. *Corythornis*; 2. *Ispidina*; 3. *Myioceyx*. Peculiar species: 1. *Corythornis cyanostigma*; 2. *C. galerita*; 3. *Ispidina picta*; 4. *I. leucogastra*; 5. *I. natalensis*; 6. *Myioceyx ruficeps*; 7. *M. lecontei*; 8. *Alcedo semitorquata*; 9. *A. quadribrachys*; 10. *Ceryle maxima*; 11. *C. sharpei*; 12. *Halcyon badia*; 13. *H. erythrogastra*; 14. *H. semicærulea*; 15. *H. senegaloides*; 16. *H. albiventris*; 17. *H. orientalis*; 18. *H. chelicutensis*; 19. *H. cyanoleuca*; 20. *H. senegalensis*; 21. *H. dryas*; 22. *H. malimbica*.

Madagascar.—Peculiar species: 1. *Ispidina madagascariensis*; 2. *Corythornis cristata*.

The boundaries assigned by Dr. Sclater to this region are borne out by the distribution of its Kingfishers; for, besides the three characteristic genera, the species of the genera *Halcyon*, *Alcedo*, and *Ceryle* are quite distinct from the other members of the genus. Thus the Ethiopian Region contains three characteristic groups of *Halcyon*, one of *Alcedo*, and one of *Ceryle*. There are, however, exceptions; for *Halcyon badia* and *Alcedo quadribrachys* are closely allied to Indian species, while the nearest allies to *Ceryle maxima*, the only characteristic African species of the genus, are certainly the slate-coloured species of *Ceryle* in South America. Again, *Ceryle rudis*, a common Indian species, is found all over Africa; but the influx of an Indian element into the Ethiopian region is evident, and corroborative proof is to hand in the fact that the other common Indian species, *Alcedo bengalensis* and *Halcyon chloris*, also range into North-eastern Africa, so that it is probable that by this same line of communication *Ceryle rudis* was introduced. As regards Madagascar, the Kingfishers confirm its affinity to the Ethiopian Region.

3. Indian Region.—*a*. Indian and Chinese Asia. Peculiar genera, 0. Peculiar species: 1. *Alcedo grandis*; 2. *Ceryle guttata*; 3. *Pelargopsis gurial*; 4. *P. amauroptera*; 5. *P. burmanica*.

b. Indo-Malayan subregion. Peculiar genus: 1. *Carcineutes*. Peculiar species: 1. *Alcedo euryzona*; 2. *Pelargopsis leucocephala*; 3. *P. fraseri*; 4. *P. malaccensis*; 5. *Ceyx rufidorsa*; 6. *C. sharpei*; 7. *C. dillwynni*; 8. *Halcyon cyanoventris*; 9. *H. concreta*; 10. *Carcineutes melanops*; 11. *C. pulchellus*.

c. Philippines. Peculiar genera, 0. Peculiar species: 1. *Alcyone cyanopectus*; 2. *Pelargopsis gouldi*; 3. *Ceyx melanura*; 4. *C. philippinensis*; 5. *Halcyon gularis*; 6. *H. lindsayi*; 7. *H. hombroni*.

The following species are widely distributed, and, although strictly characteristic of the Indian Region, are not confined to one or other of the subregions: 1. *Ceyx tridactyla*; 2. *Halcyon pileata*.

Beyond these are to be mentioned the following Kingfishers, which are characteristic of the Indian Region, but yet extend their range beyond its limits: 1. *Alcedo bengalensis*; 2. *A. asiatica*; 3. *A. beryllina*; 4. *Halcyon smyrnensis*; 5. *H. chloris*.

The Kingfishers of the Indian Region will thus be observed to form a distinct and well-

characterized group; for, although the genera are mostly the same as in the Palæarctic and Ethiopian Regions, the species are all peculiar. No principles of division of territory as proposed by Mr. Wallace and Mr. Sclater are called in question; and we may therefore pass on to the consideration of the characteristic forms of the remaining region.

4. Australian Region.—In order better to understand the geographical distribution of Kingfishers, I divide the entire region into subregions, retaining for the Malayan divisions, as nearly as possible, the lines of demarcation so well demonstrated by Mr. Wallace. It must be remembered that the limits of my own subregions are formed only on the basis of facts connected with the family *Alcedinidæ*, and may have to be modified when the entire faunæ of the different localities have to be considered.

a. Subregio Celebensis (Celebes, Sanghir, and the Sula Islands). Peculiar genera: 1. *Ceycopsis*; 2. *Monachalcyon*; 3. *Cittura*. Peculiar species: 1. *Pelargopsis melanorhyncha*; 2. *Ceyx wallacei*; 3. *Ceycopsis fallax*; 4. *Halcyon forsteni*; 5. *Monachalcyon monachus*; 6. *Tanysiptera riedeli*?; 7. *Cittura sanghirensis*; 8. *C. cyanotis*.

b. Subregio Floresiana (Timor, Flores, Lombock). Peculiar genera: 1. *Caridonax*. Peculiar species: 1. *Pelargopsis floresiana*; 2. *Halcyon australasiæ*; 3. *Caridonax fulgidus*.

c. Subregio Moluccensis (Batchian, Kaioa, Gilolo, Ternate, Morty Island, Bouru, Ceram, Amboina, Goram, Matabello, Ké). Peculiar genera, 0. Peculiar species: 1. *Alcyone affinis*; 2. *Ceyx cajeli*; 3. *C. uropygialis*; 4. *Halcyon lazuli*; 5. *H. diops*; 6. *H. funebris*; 7. *Tanysiptera sabrina*; 8. *T. doris*; 9. *T. acis*; 10. *T. margarethæ*; 11. *T. nais*.

d. Subregio Papuana (Aru Islands, Mysol, Waigiou, New Guinea, Cape-York Peninsula, Solomon Islands, Pelew Islands, Marianne Islands). Peculiar genera: 1. *Syma*; 2. *Melidora*. Peculiar species: 1. *Alcyone lessoni*; 2. *Ceyx solitaria*; 3. *Syma torotoro*; 4. *S. flavirostris*; 5. *Halcyon leucopygia*; 6. *H. nigrocyanea*; 7. *H. cinnamomina*; 8. *H. sordida*; 9. *Dacelo gaudichaudi*; 10. *D. tyro*; 11. *Tanysiptera sylvia*; 12. *T. nympha*; 13. *T. ellioti*; 14. *T. hydrocharis*; 15. *T. galatea*; 16. *Melidora macrorhyncha*.

e. Subregio Australiana (Australia generally, Van Diemen's Land, New Zealand, New Caledonia). Peculiar genera, 0. Peculiar species: 1. *Alcyone diemenensis*; 2. *A. azurea*; 3. *A. pulchra*; 4. *Halcyon macleayi*; 5. *H. pyrrhopygia*; 6. *H. vagans*; 7. *Dacelo gigas*; 8. *D. leachi*; 9. *D. cervina*; 10. *D. occidentalis*.

f. Subregio Oceanica (Polynesian Islands, eastward from the New Hebrides group). Peculiar genera: 1. *Todirhamphus*. Peculiar species: 1. *Halcyon sacra*; 2. *H. juliæ*; 3. *Todirhamphus veneratus*; 4. *T. tutus*; 5. *T. recurvirostris*.

The following genera and species are characteristic of the Australian Region, but are not strictly confined to one or other of the subregions. Peculiar genera: 1. *Alcyone*; 2. *Dacelo*; 3. *Tanysiptera*. Peculiar species: 1. *Alcedo moluccensis*; 2. *Alcyone pusilla*; 3. *Ceyx lepida*; 4. *Halcyon albicilla*.

The following species is characteristic of the Australian Region, but yet extends its range beyond the limits: 1. *H. sancta*.

It will be seen that the geographical distribution of Kingfishers is well illustrated by the light of the scheme of geographical distribution as propounded by Dr. Sclater; and the

various divisions of the Indo- and Austro-Malayan subregions, as proposed by Mr. Wallace, are also corroborated by the distribution of this family. Celebes is a geographical puzzle, and is remarkable for having three genera confined within its limits. Of these, *Monachalcyon* and *Cittura* are certainly allied to the Austro-Malayan forms *Melidora* and *Tanysiptera*, and indicate the affinity of the *Alcedinidæ*, while, if it is true that a *Tanysiptera* is found there, this will be another point of connexion with Austro-Malayana; but, on the other hand, the presence of a *Pelargopsis*, albeit of a different group from the Indo-Malayan members of the genus, and of *Halcyon coromanda*, though not absolutely identical with the typical species, forms a link of connexion with the Indo-Malayan subregion. But then there is *Ceycopsis*, a truly Celebesian form, and a very remarkable one too; for it is to be noticed that the two sections of the genus *Ceyx*, which I have called the *rufous-backed section* and the *blue-backed section*, have distinct ranges, the one being Indo-Malayan, and the other Austro-Malayan. Yet these two groups are only sections of the genus *Ceyx*; the habits are the same, and the form the same, only three toes being present. The island of Celebes is the point where the two sections might be expected to join their range; but till a year or two ago no Ceycean form was known from this locality, and no true three-toed *Ceyx* has yet been found there. Its place is taken by the recently discovered *Ceycopsis fallax*, which is closely allied to *Ceyx*, but has a tiny inner toe, and, more curious still, unites the characters of the two groups of the genus, which converge from opposite sides upon its flanks, as one may say; for it is red in general plumage, but has a bright blue back. The study of the Kingfishers, therefore, does not throw much light upon the geographical affinities of Celebes. The balance of relationship is in favour of Austro-Malayana; but still an Indian element is clearly present, while *Ceycopsis* bears the nearest relationship to *Ceyx*, on the one hand, and on the other to the Ethiopian genus *Ispidina* as represented by *Ispidina madagascariensis* of Madagascar.

The Polynesian genus *Todirhamphus* is evidently a modification of a certain group of the genus *Halcyon*; for it is impossible not to recognize the close relationship of *Todirhamphus tutus* with *Halcyon sacra*, and *T. recurvirostris* with *H. sancta*. In plumage they are almost identical; but the flat bills of the *Todirhamphi* indicate a more insectivorous diet, superinduced, no doubt, by their isolation, and consequent modification in the means of procuring food.

As regards the islands of Flores, Lombock, and Timor, the geographical distribution of Kingfishers confirms the correctness of "Wallace's line," as drawn by that gentleman for the division of the Indo- and Austro-Malayan subregions; for the affinities of the Kingfishers are decidedly Austro-Malayan. *Halcyon australasiæ* is closely allied to *H. cinnamomina*; and the genus *Caridonax*, which is peculiar to these islands, is certainly a modification of *Tanysiptera*; for take away the tails of the two birds, and *Caridonax* might be mistaken for a stout *Tanysiptera*. On the other hand the presence of a *Pelargopsis* indicates Indo-Malayan affinities; but this is to be accounted for by the narrow space which separates the two subregions, and there can be no doubt that the *Pelargopsis*, which is a bird of strong flight, like all piscivorous Kingfishers, could easily cross such a feeble barrier.

The scheme of geographical distribution proposed by Professor Huxley (P. Z. S. 1868, p. 294) does not differ so much from that of Dr. Sclater as to invalidate any of the facts stated in the foregoing pages. Professor Huxley is doubtless right in recognizing a northern and a southern division of the globe instead of an eastern and a western, and he divides the earth into four regions, viz.: 1. Arctogæa; 2. Austro-Columbia; 3. Australasia; 4. New Zealand. These divisions have chiefly reference to the *Alectoromorphæ*, which Professor Huxley was at that time discussing; but it may be interesting to study the geographical distribution of Kingfishers by the light of this paper, and see how far it coincides with the regions above indicated.

In Arctogæa the extent of territory enclosed is very large, and, admitting the subdivisions proposed by Dr. Sclater, no points are seriously called in question regarding what I have stated about the geographical distribution of Kingfishers. In Notogæa the line that marks the northern limit of Austro-Columbia exactly coincides with the line of demarcation that would be drawn to mark the range of the six species which I have shown to be peculiar to South America; so that on that point I am at one with Professor Huxley. But I do not find the geographical distribution of Kingfishers coincide exactly with the limits he has drawn for his third region, of Australasia; for his line passes northward including the Nicobars, then southward round the Indo-Malayan islands, follows Wallace's line up the Straits of Macassar, and cuts off the Philippines from the Indo-Malayan subregion. It is on this point that the Kingfishers do not entirely agree with Professor Huxley's scheme; for all the species inhabiting the Philippines are, as I have shown, of a strictly Indian form. Beyond this, however, the geographical distribution of the *Alcedinidæ* coincides with Professor Huxley's idea of distribution; for his fourth region, New Zealand, is not affected one way or the other. Only one species is found there closely allied to the common Australian *Halcyon sancta*; and it has most probably been this species which has reached New Zealand from the Australian continent, and when once settled there has, under more favourable conditions of life, assumed a larger size but less brilliant coloration, as seems to have been the case with other birds.

CONCLUDING REMARKS.

The question not unnaturally arises, "What are the nearest allies of the Kingfishers?" To answer this question I must again have recourse to Mr. Wallace's paper on the "Natural Arrangement of Birds," in which he comes to the conclusion that, while on the one hand the *Galbulidæ*, *Bucconidæ*, *Meropidæ*, *Coraciadæ*, *Trogonidæ*, and *Prionitidæ* are all more or less allied to the Kingfishers, on the other hand their nearest allies are the Hornbills (*Bucerotidæ*). The following extract from Mr. Wallace's essay gives his conclusions in his own words:—

"From an examination of the structure of the feet and toes, and from a consideration of

their habits, we are led to consider that the Hornbills are Fissirostral birds, though of a very abnormal form. Their very short legs and united toes, with a broad flat sole, are exactly similar to those of the Kingfishers. They have powerful wings; but their heavy bodies oblige them to use much exertion in flight, which is therefore not very rapid, though often extended to considerable distances. They are (in the Indian Archipelago at least) entirely frugivorous; and it is curious to observe how their structure modifies their mode of feeding. They are far too heavy to dart after the fruit, in the manner of the Trogons; they cannot even fly quickly from branch to branch, picking a fruit here and there; neither have they strength or agility enough to venture on the more slender branches, with the Pigeons and Barbets; but they alight heavily on a branch of considerable thickness, and then, looking cautiously round them, pick off any fruits that may be within their reach, and jerk them down their throats by a motion similar to that used by the Toucans, and which has been erroneously described as throwing the fruit up in the air before swallowing it. When they have gathered all within their reach they move sideways along the branch by short jumps, or, rather, a kind of shuffle (and the smaller species even hop across to other branches), when they again gather what is within their reach. When in this way they have progressed as far as the bough will safely carry them, they take a flight to another part of the tree, where they pursue the same course. It thus happens that they soon exhaust all the fruit within their reach, and long after they have left a tree the Barbets and *Eurylaimi* find abundance of food on the slender branches and extreme twigs. We see therefore that their very short legs and syndactyle feet remove them completely from the vicinity of the Toucans, in which the legs are actively employed in moving about after their food. Their wings, too, are as powerful as those of the Toucans are weak; and it is only the great weight of their bodies that prevents them from being capable of rapid and extensive flight. As it is, their strength of wing is shown, too, by the great force with which they beat the air, producing a sound, in the larger species, which can be distinctly heard a mile off, and is even louder than that made by the flight of the great Muscovy Duck. They are still further removed from the Crows, with which they have also been very generally associated solely because they are *Conirostres*, or conic-beaked!—another instance of the extremely erroneous results which are arrived at by a dependence on a single character, and especially on one which so little influences the habits of a bird as the external form of its bill.

"The preceding deductions from the habits of these birds had been made before I became aware that Mr. Eyton had arrived at similar results from anatomical considerations alone; and I had great pleasure in finding that there was such solid support for the opinion which I had formed entirely from my own observations. The only question that remains then is, To what family of the Fissirostres do they most nearly approach? A careful consideration leads us to fix upon the Kingfishers. They are among the largest birds in the group; they have the largest bills; and in the structure of the feet the two are almost identical.

"The Hornbills of Africa are said to feed principally on reptiles, as do the Kinghunters (*Dacelo*) of Australia. We look upon Hornbills therefore as one of the abnormal developments of Fissirostral birds, of which they are the largest, the least elegant, and the least

gifted with facilities for locomotion and for obtaining food; and their nearest affinities lie in the direction of the Kingfishers."

Moreover Professor Huxley, in his celebrated paper on the Classification of Birds (P. Z. S. 1867, p. 415), also places the Hornbills in the same group as the Kingfishers; and thus from two opposite points of observation their affinity is allowed. I think that, keeping the peculiar habits of each family in view, we may agree entirely with Mr. Wallace in considering the *Bucerotidæ* to be the nearest relations of the *Alcedinidæ* now existing. It is probable that they were once still more closely connected, and that some of the links have become extinct; but, be that as it may, I take the genera *Dacelo* and *Melidora* (which, as will be seen by the Plate of Generic Characters, is only an exaggerated form of *Dacelo*) to be the extreme limit of the Alcedinine type now known, and that the peculiarities of these genera point them out as more nearly allied to the Hornbills than to any other living birds. We may suppose also that they are the most ancient form of Kingfisher extant; for it is certain that *Alcedo*, which is one of the genera furthest removed in outward appearance from *Melidora*, is the most specialized type of the family *Alcedinidæ*, and therefore belongs to a more recent development. Let any one carefully examine the various forms of Kingfishers in the present 'Monograph,' beginning with *Melidora*, and he cannot but be struck with the peculiar bill exhibited by that bird—stout, broad, hooked, and formed for the capture of insects, lizards, or snakes. Then let him suddenly turn to the beginning of the work and examine *Alcedo ispida*. This type of Kingfisher is exactly the opposite to what he before beheld: the stout depressed beak, the hooked maxilla, and the long tail are all gone; and instead there is a bird with a long, narrow, pointed bill, and a short stumpy tail, both characters admirably adapted for the manner in which it gains its food—the pointed bill formed for cleaving the water, and the short tail to act as a rudder to guide the fisher in its downward plunge. Turning once more to *Melidora* we seek the links which may still be left us on the globe whereby to connect forms apparently so different, and at once we seize upon *Cittura* as the nearest approach to this extreme form; for here is also seen the grooved bill, although the maxillary hook is absent. I think any one examining specimens of the genera *Melidora* and *Cittura* will readily admit that they are closely allied; and again we notice that the two last-named genera, along with *Dacelo* and *Carcineutes*, possess one structural character in common; and that is, a certain tendency to a small notch on the commissure near the base of the maxilla. This peculiarity is only slightly visible in *Dacelo*, more in *Melidora* and *Cittura*, and most in *Carcineutes*, forming, in this genus, a character of primary importance. This fact, small as it is, serves to connect these four genera together; but while *Cittura* and *Melidora* are certainly closely allied, and in the same way *Dacelo* and *Carcineutes*, the latter have very little else in common with the former, and though apparently modelled on the same type, the links are wanting for closer connexion. It will be remembered that at the outset of this Introduction I stated that the Kingfishers might be naturally divided into three subfamilies, Piscivorous, Omnivorous, and Reptilivorous Kingfishers. It is with the third or last named of these groups that we are now dealing; and besides the four genera I have mentioned, I think that three other genera

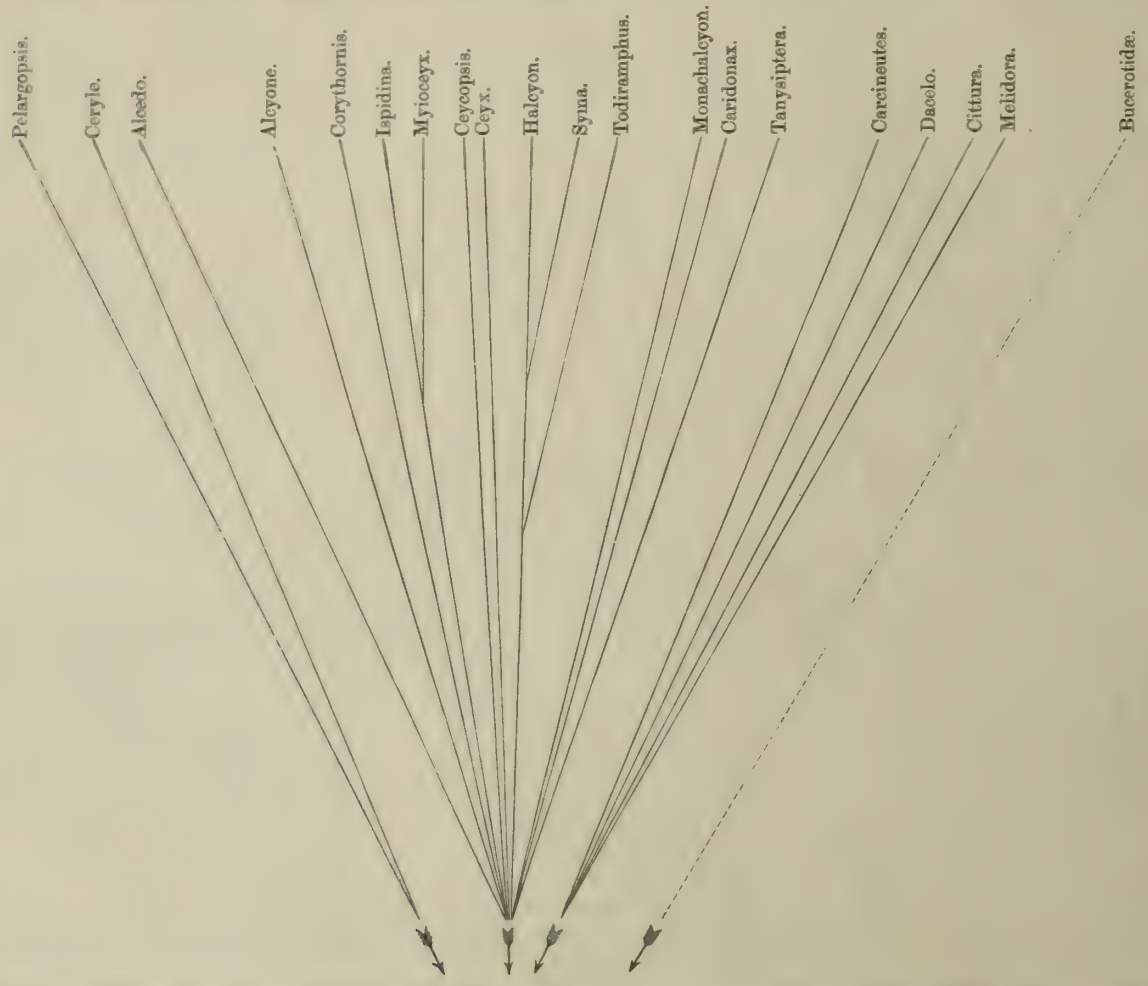
must be included. The first of these is *Tanysiptera*, which embraces the most elegant and beautiful of all the known Kingfishers. The habits are thus described to me in a letter from my kind friend Mr. Wallace:—

"These birds are all inhabitants of dense thickets or forests where there is soil free from dense vegetation, from which they can pick up insects, small mollusks, or crustacea. They rest on branches three to five feet from the ground, and dart down on their prey, often with such force as to stick their bill into the ground, as shown by its being often covered with mud. They are said to nest in deserted white-ants' nests or in caves or holes in banks. In Aru *T. hydrocharis* was often brought me by the native boys alive. They caught them before dawn, roosting under ledges of the coralline rocks which border the forest water-streams in those islands."

Now it is evident that among the Alcedinine genera now existing there is only one which can be compared with *Tanysiptera*; and that is *Caridonax*, which appears to me to be a direct link between the foregoing genus and certain species of *Halcyon*. Beyond this indication of affinity we have positively no direct characters by which to guide us as to the correct position of the genus *Tanysiptera*; for it differs from all other Kingfishers in having only ten tail-feathers, and having the middle pair of these feathers elongated and ornamented with a more or less distinct spatula or racket. I am therefore forced to put *Tanysiptera* a little apart from the direct line of affinity in the chain of genera now before us at the present day; but I consider that it has direct connexion with *Caridonax*, and, of the other forms, perhaps inclines towards *Cittura*, the intermediate links being now missing. I have already stated that the genus *Caridonax* (which I would also include among the Reptilivorous Kingfishers) forms the direct link between *Tanysiptera* and *Halcyon*, the actual species most nearly approaching it being *Halcyon leucopygia* from the Solomon Islands. The only remaining genus of Reptilivorous Kingfishers is *Monachalcyon*; and this, as far as I can see, shows no direct affinity to any existing genus, and the only place I can assign to it is in the vicinity of *Tanysiptera*, to an allied form of which it may at one time possibly have been connected. Only one species of the genus is known; and the outward facies of the adult inclines somewhat to certain species of *Halcyon*; but the young bird (*vide* the Plate of the species) indicates an affinity to *Tanysiptera*, near which genus I have accordingly placed it. It is very probably derived from the same parent stock and, being isolated in the island of Celebes, has been modified into its present form. The second subfamily which I first proposed, was to contain those Kingfishers whose food was mixed; and the large genus *Halcyon* is the type of this subfamily. *Todirhamphus* I consider to be an offspring of *Halcyon*, whose place it supplies in the Pacific Islands: and here probably isolation has assisted to favour the tendency to variation; for while external resemblances to the plumage of *Halcyon* still exist, the form of beak is more depressed, showing, in my opinion, that circumstances had induced a more strictly insectivorous diet, and as the necessity for the long thin beak of the *fisher* diminished, that organ became more and more modified as the primary object of its employment vanished, till at last it became depressed and flat as the bird became gradually more a *feeder on insects*. *Syma*,

also, I take to be a modification of *Halcyon*. With this genus we arrive at the end of the long-tailed *Daceloninæ*; for the remaining genera belonging to this subfamily are strictly Alcedinine in form (that is to say, appear to be modelled on the same type as the true Kingfishers), but yet by their habits belong to the insectivorous section of the family.

These genera are four in number—namely, *Ceyx*, *Ceycopsis*, *Ispidina*, and *Myioceyx*.



They are all closely connected, *inter se*; and the link towards *Halcyon* seems to be in the lilac-backed section of the genus *Ceyx* with the lilac-backed section of the genus *Halcyon*, where the tail is rather shorter than in most of the other members of the genus. *Myioceyx* I consider to be a modification of *Ispidina*, the difference in form of bill showing a peculiar adaptation to insect food. Unfortunately the two species of this genus are only represented by three specimens in the whole of the Museums in the world, so that nothing is known of their habits. I have already (*anteà*, p. vii.) enlarged upon what I consider to be the links of connexion between the subfamily *Alcedininæ* and *Daceloninæ*, so that, as these conclusions carry us directly from *Ceyx* and *Ispidina* direct to *Alcyone* and *Corythornis*, and thence to *Alcedo*, we have only two genera left, namely *Ceryle* and *Pelargopsis*. These two stand

apart from any other Kingfisher, but, by reason of their fishing-propensities and structure, apparently belong to the *Alcedininæ*, of which they are the most aberrant forms.

If we endeavour to draw a phylum whereby the affinities of the Kingfishers may be resolved, it would, I believe, take somewhat of the form opposite.

A better idea may perhaps be gained by the accompanying map, which gives what I conceive to be a fair idea of the affinities of the Kingfishers at present existing. The nearest allies are several; and it is possible that a close study of each of the families *Coraciadæ*, *Trogonidæ*, *Momotidæ*, *Galbulidæ*, *Bucconidæ*, *Meropidæ*, and *Bucerotidæ* would give us data by which a clearer idea of the Fissirostral group of the *Coccygomorphæ* might be obtained; and when that is done, it is possible that many of the conclusions deduced from a study of the Kingfishers alone may have to be modified.

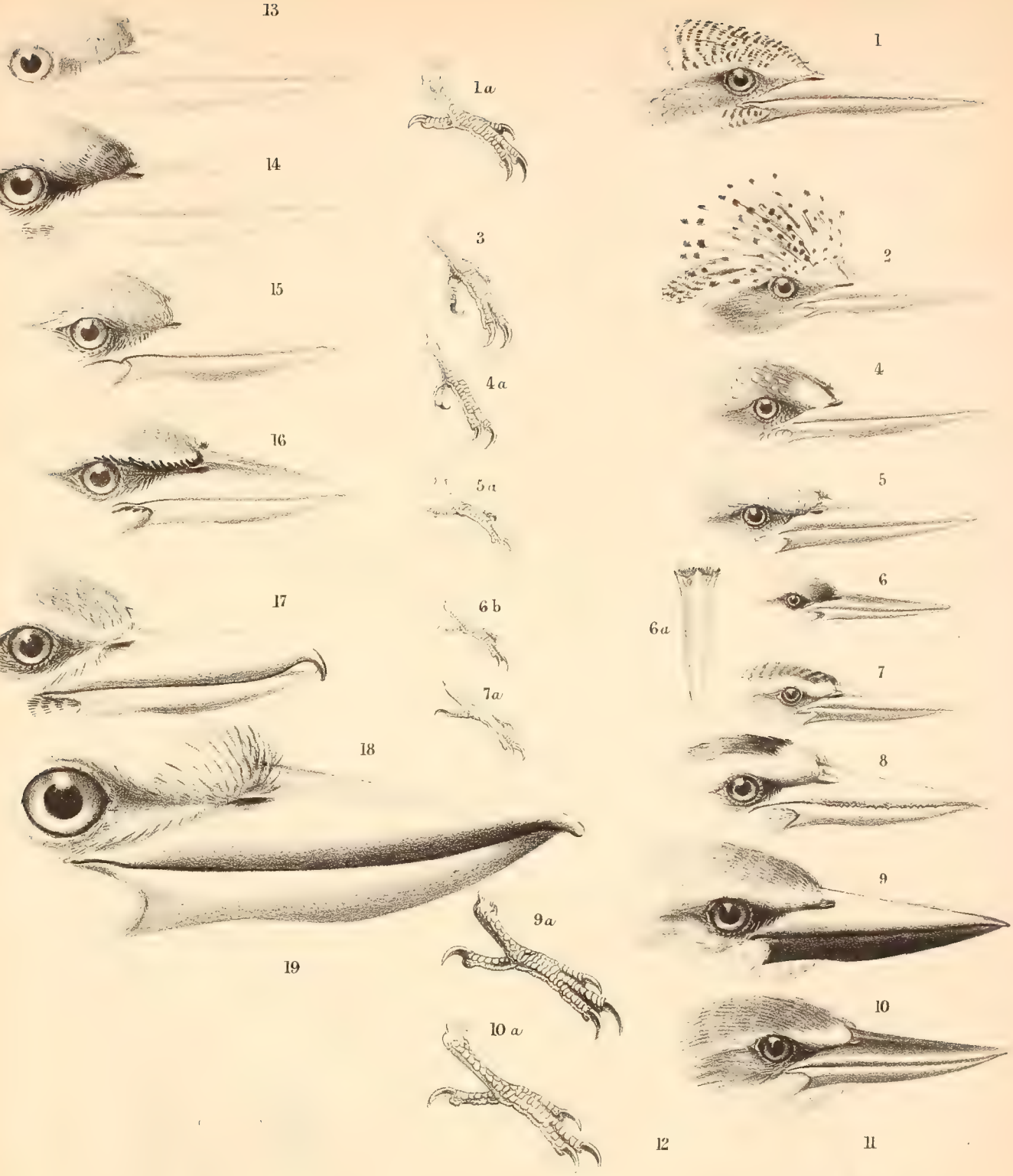
Lastly, there is one point to which I wish to draw attention; and that is the distribution of the two subfamilies; for it will at once be noticed that the Insectivorous Kingfishers have their greatest development in the Austro-Malayan subregion, while the piscivorous Kingfishers are found all over the globe, except Oceania. It is a moot question whether I am right in supposing the *Bucerotidæ* to be the nearest allies of the *Alcedinidæ*; but certain it is that the gradation of Kingfishers from the extreme development of piscivorous characters to the extreme form of Reptilivorous *Dacelo* is very gradual, even in the remains of the family now before our eyes; and the modification in the form of bill is also very plain, this organ being gradually more and more compressed as the genera become more piscivorous; and if the insect-eaters are the oldest Kingfishers, we must assume that these peculiar forms were still highly developed at a very early epoch, and that from this origin a gradual modified type spread itself over the other regions. Only in the same way that Professor Huxley accounts for the distribution of *Psittaculæ*, can the distribution of *Ceryle* be accounted for, and its isolated presence in the New World be explained, while the distribution of *Alcedo* might also be accounted for by some such conclusion. It is, however, to wiser heads than mine that I leave the consideration of such matters. I have set before them to the best of my ability the facts connected with the *Alcedinidæ* as they exist at the present day, and I trust that some facts have transpired in the present work to conduce to the advancement of my favourite science, while for the shortcomings of the author I crave the leniency of the critic.

DESCRIPTION

OF THE

PLATE OF GENERIC CHARACTERS.

Fig. 1. Head of *Alcedo ispida*.
1 *a*. Foot of *Alcedo ispida*.
2. Head of *Corythornis cyanostigma*.
3. Foot of *Alcyone affinis*.
4. Head of *Ceyx lepida*.
4 *a*. Foot of *Ceyx lepida*.
5. Head of *Ceycopsis fallax*.
5 *a*. Foot of *Ceycopsis fallax*.
6. Head of *Myioceyx ruficeps*.
6 *a*. Beak of *Myioceyx ruficeps*.
6 *b*. Foot of *Myioceyx ruficeps*.
7. Head of *Ispidina picta*.
7 *a*. Foot of *Ispidina picta*.
8. Head of *Syma flavirostris*.
9. Head of *Halcyon senegalensis*.
9 *a*. Foot of *Halcyon senegalensis*.
10. Head of *Todirhamphus veneratus*.
10 *a*. Foot of *Todirhamphus veneratus*.
11. Top view of skull of *Ceryle alcyon*.
12. Top view of skull of *Pelargopsis fraseri*.
13. Head of *Monachalcyon monachus*.
14. Head of *Caridonax fulgidus*.
15. Head of *Carcineutes pulchellus*.
16. Head of *Cittura cyanotis*.
17. Head of *Melidora macrorhina*.
18. Head of *Dacelo leachi*.
19. Tail of *Tanysiptera galatea*.



GENERIC CHARACTERS OF ALCEDINIDÆ

LITERATURE.

I HAVE been induced to go rather fully into the subject of the works examined in connexion with the present Monograph, under the impression that a literary history of the *Alcedinidæ* will be of use to the future student of the family. I have had the advantage of the Zoological Society's Library at my command; and I cannot sufficiently express my gratitude for the facilities afforded me by Dr. Sclater and the Council for pursuing my studies while in their service. In order to render the treatment of the subject more plain, I have adopted the method of the characterization of ornithological detail perfected by my friends Professor Newton and Dr. Hartlaub in their Zoological Records.

LINNÆUS, C. Systema Naturæ, tom. i. 8vo, 1766, p. 178.

The genus *Alcedo* is described. The following species are included:—

1. *Alcedo cristata*; 2. *A. inda*; 3. *A. ispida*; 4. *A. erithaca*; 5. *A. madagascariensis*; 6. *A. superciliosa*; 7. *A. alcyon*; 8. *A. torquata*; 9. *A. capensis*; 10. *A. senegalensis*; 11. *A. smyrnensis*; 12. *A. rudis*; 13. *A. dea*; 14. *A. paradisea*; 15. *A. galbula.*

Of these, *A. erithaca* and *A. dea* (ex Briss. and Seba) are not determinable, while *A. paradisea* and *A. galbula* are not Kingfishers, but Jacamars (*Galbulidæ*). All the others are recognizable at the present day.

VOSMAER, A. Beschryving van twee zeer fraaie, Kortstaartige Oost-Indische Ys-Vogeltjes, 4to, 1768.

A plate of these two Kingfishers is given, showing them to be *Ceyx tridactyla* (Pall.) and *Ceyx rufidorsa*, Strickl.

PALLAS, P. S. Spicilegia Zoologica, Fasc. 6, 4to, 1769.

Alcedo tridactyla is a new species.

Alcedo maxima is a new species from the Cape of Good Hope.

LATHAM, Dr. J. General Synopsis of Birds, vol. ii. 4to, 1772, p. 607.

The author enumerates the following species, to which, however, he does not apply Latin appellations. Those in italics not determinable:—

1. Great Brown Kingfisher (ex Sonn.). 2. Cape Kingfisher (*A. capensis*, Linn.). 3. Great African Kingfisher (*A. maxima*, Pall.), cum var. A (ex Buff. Pl. Enl. 679=*Ceryle maxima* (Pall.)). 4. Black and White Kingfisher (*A. rudis*, L.). 5. *Egyptian Kingfisher* (ex Hasselq. It. p. 245). 6. *New Guinea Kingfisher* (ex Sonn. Voy. p. 171, t. 107).

7. Smyrna Kingfisher (*A. smyrnensis*, L.), cum var. A, *Great Gambia Kingfisher*. Latham

takes his English names from a plate of Edwards (vol. i. pl. 8). On turning to this bird I find that it is not a recognizable species. It would do for *Pelargopsis amauroptera*, but for the fact of the black depicted on the wing. It looks like a manufactured bird, made up of the above-mentioned *Pelargopsis* with the body of some African species, perhaps *H. senegalensis* or *H. dryas*. Latham refers as a synonym of this bird to the *Grand Martin-pêcheur de Madagascar* of Buffon (Pl. Enl. 232). This, however, is a good species, and bears the name of *Halcyon gularis* (Kuhl); var. B of his Smyrna Kingfisher (from Albin's marvellous figure, vol. iii. pl. 28) is the true *H. smyrnensis*.

8. White-headed Kingfisher (ex Buff. Ois. vii. p. 190). 9. *Crab-eating Kingfisher* (ex Buff. Ois. vii. p. 183); (*a*) var. A (ex Linn. S. N. i. p. 180)=*H. senegalensis* (L.); (*b*) var. B ex ins. St. Jago=*H. erythrogastra* (Temm.); (*c*) var. C (ex Buff. Ois. vii. p. 194)=*H. semicærulea* (Forsk.). 10. *White-collared Kingfisher*. 11. Green-headed Kingfisher, "Bouru" (ex Buff. Ois. vii. p. 190). 12. Sacred Kingfisher (*descr. orig.*), ex ins. Soc.; cum var. A= *H. sacra* (Gm.), ad.; var. B (pl. xxvii.), "Ulietea" (=*H. sancta*, V. & H.); var. C, "New Zealand"=*H. vagans* (Less.); var. D, ex Sonn. Voy. p. 67, t. 33,=*H. chloris* (Bodd.). 13. Venerated Kingfisher, "Apye" (*descr. orig.*). 14. Respected Kingfisher (*descr. orig.*). 15. Black-capped Kingfisher (ex Buff. Ois. vii. p. 189); var. A, ex Sonn. Voy. p. 65, t. 31,= *H. albiventris* (Scop.). 16. Common Kingfisher (*A. ispida*, L.), var. A, *Le Martin Pescheur du Senegal*, Briss. Orn. iv. p. 485, no. 7. pl. 39. fig. 1. 17. *Red-headed Kingfisher* (*A. erithaca*, L.); var. A=*Ceyx tridactyla*. 18. Purple Kingfisher. 19. Rufous Kingfisher (*A. madagascariensis*, L.). 20. Blue-headed Kingfisher (ex Buff. Ois. vii. p. 198). 21. Indian Kingfisher (ex Buff. Ois. vii. p. 201). 22. Crested Kingfisher (*A. cristata*, L.); var. A, ex Seba (=*Corythornis cyanostigma* (Rüpp.). 23. *Eastern Kingfisher* (ex Brisson). 24. *Ternate Kingfisher* (*A. dea*, L.). 25. *Cayenne Kingfisher* (ex Brisson). 26. Cinereous Kingfisher (*A. torquata*, L.). 27. Belted Kingfisher, var. A; var. B=*A. alcyon*, L.; var. C is indeterminable. 28. *Brazilian Spotted Kingfisher*. 29. Rufous and Green Kingfisher (ex Buff. Ois. vii. p. 215)=*Ceryle inda* (L.). 30. White and Green Kingfisher, "Cayenne,"= *Ceryle americana* (Gm.). 31. *Brazilian Kingfisher* (ex Brisson). 32. Spotted Kingfisher (ex Edwards, pl. 335)=*Ceryle inda* (L.). 33. Surinam Kingfisher (ex Fermin, Voy. Surin. ii. p. 181)=*Ceryle inda* (L.). 34. Supercilious Kingfisher (*A. superciliosa*, L.). 35. *White-billed Kingfisher* (ex Seba). 36. Three-toed Kingfisher.

Forskål, P. Descriptiones Animalium, ed. Niebuhr, 4to, 1778 (p. 2).

Alcedo semicærulea is described as a new species from Yemen, in Arabia.

Müller, P. L. S. Linné vollständiges Natursystem, &c., 8vo, 1776.

Alcedo rubra is the name assigned to the bird figured by Vosmaer (Nat. Besch. Vog. pl. 3). It is a *Galbula*.

Alcedo galerita is the name given to the bird figured by Buffon (Pl. Enl. 356. fig. 1). This name stands.

Alcedo leucocephala is the name given to the bird figured by Buffon (Pl. Enl. 356. fig. 2). It is the *Alcedo semicærulea* of Forskål.

Alcedo aurea is the name given to the bird figured by Vosmaer (Nat. Besch. Vog. pl. 2). It is a *Galbula*.

Boddaert, P. Table des Planches Enluminéez d'Histoire Naturelle de M. Daubenton: folio. Utrecht, 1783.

In this work, which is extremely rare, names are given to Buffon's plates.

Alcedo gigas (p. 40) is a new species (ex Buff. pl. 663).

Alcedo fusca (p. 54) is a new species (ex Buff. pl. 894).

Alcedo pileata (p. 41) is a new species (ex Buff. pl. 673).

Alcedo guttata (p. 42) is a new species (ex Buff. pl. 679).

Alcedo rubra (p. 48) is a new species (ex Buff. pl. 778. fig. 2).

Todus pictus (p. 49) is a new species (ex Buff. pl. 783. fig. 1).

Alcedo chloris (p. 49) is a new species (ex Buff. pl. 783. fig. 2).

Alcedo javana (p. 47) is a new species (ex Buff. pl. 757).

Alcedo nigra (p. 22) is a new species (ex Buff. pl. 756. fig. 1). This name must surely have been a misprint.

Alcedo viridirufa (p. 36) is a new species (ex Buff. pl. 592).

Scopoli, J. A. Deliciæ Floræ et Faunæ Insubricæ, Pars 2, folio. Ticini, 1786.

Latin titles are given to the birds described by Sonnerat in his 'Voyages.' They are as follows:—

Alcedo coromandeliana, Scop. (ex Sonn. Voy. Ind. ii. p. 212, pl. 118)=*Merops coromandus* (Lath.).

Alcedo albiventris, Scop. (ex Sonn. Voy. N. Guin. p. 64, pl. 31)=*Halcyon albiventris* (Scop.).

Alcedo tridactyla, Scop. (ex Sonn. Voy. N. Guin. p. 66, pl. 32)=*Ceyx tridactyla* (Pall.)?

Alcedo collaris, Scop. (ex Sonn. Voy. N. Guin. p. 67, pl. 33)=*Halcyon chloris* (Bodd.).

Alcedo undulata, Scop. (ex Sonn. Voy. N. Guin. p. 170, pl. 106)=*Dacelo gigas* (Bodd.).

Gmelin, O. F. Linnæi Systema Naturæ, tom. i. 8vo, 1788 (p. 447).

In this work all the Linnean species are enumerated, and titles given to Latham's species described in the 'General Synopsis.'

Alcedo orientalis is the name proposed for Latham's "Eastern Kingfisher." This bird I cannot determine.

Alcedo surinamensis is proposed for Latham's "Surinam Kingfisher." It is *Alcedo inda*, L.

Alcedo purpurea (ex Latham's "Purple Kingfisher")=*Alcedo tridactyla*, Pall.

Alcedo cæruleocephala (ex Latham's "Blue-headed Kingfisher")=*Alcedo galerita*, Müll.

Alcedo bengalensis is a new species founded on Latham's "Indian Kingfisher."

Alcedo leucorhyncha (ex Latham's "White-billed Kingfisher"). Indeterminable.

Alcedo brasiliensis (ex Latham's "Brazilian Kingfisher"). Indeterminable.

Alcedo americana is a new species founded on the "White and Green Kingfisher" of Latham.

Alcedo bicolor (ex Latham's "Rufous and Green Kingfisher")=*Alcedo inda* (L.).

Alcedo maculata (ex Latham's "Brazilian Spotted Kingfisher") is not recognizable.

Alcedo cayennensis (ex Latham's "Cayenne Kingfisher"). Not distinguishable.

Alcedo atricapilla (ex Latham's "Black-capped Kingfisher")=*A. pileata*, Bodd.

Alcedo atricapilla, var. β (ex Sonnerat)=*A. albiventris* (Scop.).

Alcedo venerata is a new species founded on Latham's "Venerated Kingfisher."

Alcedo sacra is a new species founded on Latham's "Sacred Kingfisher."

Alcedo sacra, var. β, is the adult *A. sacra*.

Alcedo sacra, var. γ (ex Latham's "Sacred Kingfisher," var. B)=*H. sancta*, V. & H.

Alcedo sacra, var. δ (ex Latham's "Sacred Kingfisher," var. C)=*H. vagans*, Gray.

Alcedo sacra, var. ε (ex Sonn. Voy. N. Guin. p. 67, pl. 33)=*A. chloris*, Bodd.

Alcedo chlorocephala (ex Latham's "Green-headed Kingfisher")=*A. chloris*, Bodd.

Alcedo cærulea (ex Latham's "White-collared Kingfisher"). Indeterminable with certainty.

Alcedo fusca (ex Latham's "Great Brown Kingfisher")=*Alcedo gigas*, Bodd.

Alcedo maxima (ex Latham's "Great African Kingfisher")=*Alcedo maxima*, Pall.

Alcedo maxima, var. β=*Ceryle maxima* (Pall.).

Alcedo leucocephala is a new species. It is Latham's "White-headed Kingfisher."

Alcedo flavicans is described for the first time. The subject of the description (though the fact is not acknowledged) is the bird called *Ten-rou-joulon* by the natives of Celebes (*cf.* Buff. Ois. vii. p. 191). The whole story appears a fabrication.

Alcedo novæ guineæ (ex Latham's "New Guinea Kingfisher"). Indeterminable.

Alcedo ægyptiaca (ex Latham's "Egyptian Kingfisher"). Indeterminable.

Alcedo grandis (ex Latham's "Great Jacamar") is a *Galbula*.

Latham, Dr. Index Ornithologicus, 4to, 1790 (p. 245).

In this volume the author brings the synopsis of the Kingfishers down to the time of writing, and here he first assigns Latin appellations. For most of the birds, however, described by him in the 'General Synopsis' Gmelin had already given names, which are allowed by Latham in the present 'Index.' I shall therefore only give the few titles which are here assigned for the first time.

Alcedo gigantea (ex "Great Brown Kingfisher" of the 'General Synopsis')=*Alcedo gigas*, Bodd.

Alcedo cancrophaga ("Crab-eating Kingfisher"). Indeterminable.

Alcedo coromanda is the name proposed for Sonnerat's *Martin-Pêcheur violet de la côte de Coromandel*.

Alcedo amazonia is the name proposed for the "Amazonian Kingfisher" (Lath. Suppl. to Syn. p. 116).

Shaw and Nodder. Vivarium Naturæ, or 'The Naturalist's Miscellany,' 24 vols. 8vo. 1790–1813.

Alcedo cristata is figured (vol. i. pl. 15).

Alcedo ispida is figured (vol. iv. pl. 129).

Alcedo? pusilla is figured (vol. v. pl. 159), =*Ispidina picta*.

Alcedo cærulea is figured (vol. viii. pl. 269). Indeterminable.

Alcedo erithaca is figured (vol. ix. pl. 317). Apparently *Ceyx tridactyla*, but is represented with four toes.

Alcedo atricapilla is figured (vol. xii. pl. 265).

Alcedo chlorocephala is figured (vol. xiii. pl. 525).

Alcedo tribrachys is figured (vol. xvi. pl. 681).

Alcedo leucocephala is figured (vol. xix. pl. 793).

Alcedo smyrnensis is figured (vol. xix. pl. 825).

Alcedo inda is figured (vol. xxi. pl. 889).

Alcedo ultramarina is figured (vol. xxi. pl. 901).

The scientific value of this work is very small, as all the figures and descriptions are taken from the works of Buffon, Albin, Edwards, &c.

Latham, H. Supplement II. to the General Synopsis of Birds, 1801 (p. xxxii).

Alcedo azurea is the name proposed for the "Azure Kingfisher" (Lath. Syn. Suppl. p. 372).

Lacépède. Mémoires de l'Institut, 1801, p. 511.

The genus *Ceyx* is founded.

Daudin, F. M. Description d'un Guêpier et d'un Martin-pêcheur d'Afrique (Ann. Mus. d'Hist. Nat. ii. p. 440, 1803).

Alcedo ultramarina is a new species. It is *Ispidina picta* (Bodd.).

Brehm, C. L. Handbuch der Naturgeschichte aller Vögel Deutschlands, 8vo. Ilmenau, 1811.

Alcedo subispida (p. 149) and *A. advena* (p. 150) are described as distinct from *A. ispida*.

Shaw, Dr. G. General Zoology, vol. viii. part 1, Aves, 8vo, 1812 (p. 52).

All the names of the previous writers are introduced, the new ones proposed being :—

Alcedo afra=*Alcedo maxima*, Pall., as is admitted by the author.

Alcedo malimbica (ex *Le Martin-pêcheur de Malimbe* of Sonnini) is described.

Alcedo javanica (ex Buff. Pl. Enl. 757)=*Pelargopsis leucocephala* (Gm.).

Alcedo capistrata (ex Latham's "White-collared Kingfisher"). Indeterminable.

Alcedo tribrachys=*Alcedo azurea*, Lath.

Stanley, Lord. Appendix to Salt's Travels in Abyssinia, 1814.

Halcyon chelicuti is a new species (p. lvi).

Leach, W. E. Zoological Miscellany, 8vo, vol. ii. 1815 (p. 125).

Dacelo is a new genus. The type is the *Alcedo gigantea* of Lath. (*Alcedo gigas*, Bodd.).

Vieillot, J. P. Nouveau Dictionnaire d'Histoire Naturelle, tome xx., 1818 (p. 394).

Alcedo cærulescens is a new species from Timor.

Alcedo cyanoleuca is a new species from Angola.

Alcedo cinereifrons is a new species from Malimba. It is *A. malimbica* of Shaw.

Alcedo rubescens is a new species from Paraguay (ex Azara). It is *Alcedo americana* of Latham.

Alcedo nutans is a new species from Malimba. It is *Alcedo picta* of Boddaert.

Alcedo cyanoventris is a new species from Java.

Alcedo viridis is a new species from Paraguay. It is *Alcedo americana* of Gmelin.

Alcedo beryllina is a new species from Java. It is *A. cærulescens* (suprà).

Alcedo australasia is a new species from "Australasia."

Kuhl, H. Buffoni et Daubentoni figurarum Avium coloratarum nomina systematica, ed. Th. van Swinderen. 4to. Groningæ, 1820 (p. 4).

Alcedo gularis is a new species (ex Pl. Enl. 232).

Dumont. Dictionnaire des Sciences Naturelles, xxix. p. 472 (c. 1820).

Alcedo vestita, "Cuv." is a new species. It is *Ceryle amazonia* (Lath.).

Alcedo ruficeps, "Cuv." is a new species. It is *H. cinnamomina*, Sw.

Swainson, W. Zoological Illustrations, vol. i. (1820–21).

Alcedo asiatica is a new species from Java.

Alcedo azurea is figured (plate 26).

Halcyon is a new genus; type *H. senegalensis* (L.).

Halcyon collaris is figured (plate 27).

——. Zoological Illustrations, vol. ii. (1821–22).

Halcyon cinnamominus is a new species from "New Zealand." It is figured (plate 1).

——. Zoological Illustrations, vol. iii. (1822–23).

Alcedo semitorquata is a new species from the Fish River, Cape Colony. It is figured (plate 26).

Horsfield, Dr. Thos. Systematic Arrangement and Description of Birds from the Island of Java (Linn. Trans. xiii. p. 133, 1822).

Alcedo meninting (p. 172) is a new species, =*Alcedo asiatica*, Swains.

Alcedo biru (p. 172) is a new species, =*Alcedo cærulescens*, Vieill.

Entomothera (p. 173) is a new genus, formed for the reception of Kingfishers intermediate between *Alcedo* and *Dacelo*. The type is *Alcedo coromanda* (Lath.).

Alcedo melanoptera (p. 174) is a new species, =*Halcyon cyanoventris* (Vieill.).

Dacelo pulchella (p. 176) is a new species.

Lichtenstein, Dr. H. Verzeichniss der Doubletten des Zoologischen Museums: small 4to. Berlin, 1823.

Alcedo striolata is a new species from Senegambia. It is the same as *Alcedo chelicuti* of Stanley, from Abyssinia.

Bonnaterre et Vieillot. Tableau Encyclopédique et Méthodique des trois Règnes de la Nature—Ornithologie, 1ère partie, 4to, 1823 (p. 281).

A complete compilation, the only new species described being:—

Alcedo cinerea (p. 286)=*Alcedo torquata*, L.

Alcedo taparara (p. 293). "La Guyane, Cayenne." Indeterminable, but not an American Kingfisher.

Alcedo cyanea (p. 395, ex Azara)=*Alcedo torquata*, L.

Alcedo variegata=*Alcedo chelicuti*, Stanl.

Alcedo tricolor. Indeterminable.

Temminck, C. J. Nouveau Receuil de Planches coloriées d'Oiseaux, vol. iv. folio, 1823–1836.

Thanks to the pains taken by Mr. Crotch (Ibis, 1868, p. 500), we are now acquainted with the dates at which the livraisons of this work were issued. Although some of the Kingfishers were described as early as 1823, they do not seem to have been known to Bonnaterre and Vieillot; nor do these authors appear to have been acquainted with the present work.

Ceyx lepida is a new species from Amboina.

Ceyx solitaria is a new species from the Bay of Lobo, in New Guinea.

Ceyx pusilla is a new species from the same locality.

Figures of all three species are given.

Alcedo lugubris is a new species from Japan, of which a figure is given.

Alcedo biru and *Alcedo meninting* are figured.

Alcedo melanorhyncha is a new species from Celebes: a figure is given.

Alcedo omnicolor is a new species described and figured for the first time under the above MS. name proposed by Reinwardt. It is *Halcyon cyanoventris* (V.).

Alcedo diops is a new species from "Amboina, Timor, and Celebes.' All these localities are erroneous.

Alcedo lazuli is a new species from "Sumatra." The locality is erroneous. Figures of both species are given.

Alcedo euryzonia (err. *eryzona*) is a new species described, but not figured, from Java.

Dacelo cyanotis is a new species from "Sumatra." The locality is erroneous.

Dacelo concreta is a new species from Sumatra.

Dacelo pulchella, Horsf., is figured.

Dacelo buccoides is a new species from "Java and Sumatra." It is the female *Dacelo pulchellus* (Horsf.).

Figures of all the above-mentioned birds are given.

Quoy et Gaimard. Voyage autour du Monde, éxecuté sur les corvettes l'Uranie et la Physicienne, Zoologie: 4to. Paris, 1824.

Dacelo gaudichaud is a new species from the Papuan Islands (Planche 15).

Stephens, J. F. General Zoology, commenced by the late George Shaw, M.D., &c. Vol. xiii. part 2, Aves: 8vo. 1825.

A very fair résumé of the species of Kingfishers, those of Swainson and Temminck described up to the present date being included.

Ceyx luzoniensis is the name proposed for Shaw's *Alcedo tridactyla*. It is the true *Ceyx tridactyla* (Pall.).

Vieillot, L. P. Galerie des Oiseaux, 4to, vol. i. Paris, 1825.

Alcedo cinereifrons is figured (pl. 187).

Alcedo gigantea is figured (pl. 188).

Jardine, Sir W., and Selby, P. J. Illustrations of Ornithology, 4 vols. 4to. 1825–1839.

Ceyx azurea is figured (pl. 55. fig. 1).

Ceyx tridactyla is figured (pl. 55. fig. 2). This is the true *C. rufidorsa*, Strickl.

Halcyon sanctus, ad. et juv., are figured (pls. 96, 97).

Halcyon macleayi is a new species, figured (pls. 100, 101).

Ruppell, E. Atlas zu der Reise im nördlichen Afrika. Vögel bearb. von Dr. Ch. Cretzschmar. Folio. Frankfurt a. Main, 1826.

Dacelo pygmæa, Cretzsch., is a new species from Kordofan and Eastern Abyssinia. It is the *Alcedo chelicuti* of Stanley.

Lesson, R. P. Voyage autour du Monde sur la Corvette 'La Coquille.' Zoologie, vol. i. 4to. Paris, 1826 (p. 684).

Syma is a new genus. The type is *Syma torotoro*, sp. n., from New Guinea.

Dacelo macrorhinus is a new species from New Guinea.

Alcedo vagans is a new species from New Zealand.

Vigors, N. A., and Horsfield, Thos. Description of the Australian Birds in the Collection of the Linnean Society. (Trans. Linn. Soc. xv. p. 170, 1827.)

"*Dacelo leachii*, Lath. MSS." is described as a new species for the first time.

Halcyon sanctus is a new species.

Lesson, R. P. Sur le genre *Todirhamphus*. (Mém. Soc. d'Hist. Nat. Paris, iii. p. 11. 1828.)

The full description of the genus is given. The type is *T. divinus*, Less., =*T. veneratus* (Lath.). This and *T. tutus* compose the known members of the genus.

Boie, F. Bemerkungen über mehrere neue Vogelgattungen. (Isis, 1828, p. 312.)

The genus *Ceryle* is founded. The type is *C. rudis*.

Vigors, N. A. On Birds from the Himalayan Mountains. (P. Z. S. 1830. p. 22.)

Alcedo guttatus is a new species.

Vigors, N. A. On a Collection of Birds from Manilla, presented by H. H. Lindsay, Esq. (P. Z. S. 1830–31, p. 97.)

Dacelo lindsayi is a new species.

Dacelo lessonii is a new species. It is the young of the former bird.

Smith, Dr. A. Contributions to the Natural History of South Africa. (S. Afr. Quart. Journ. no. 5, p. 14, 1831.)

Alcedo natalensis is a new species.

Lesson, R. P. Traité d'Ornithologie. 8vo. Paris, 1831 (p. 240).

Dacelo actæon is a new species. It is *Halcyon erythrogastra.*

Choucalcyon is a new genus. The type is *Dacelo gaudichaudi.*

Melidora is a new genus. The type is *Dacelo macrorhinus* of Lesson, for which the name of *Melidora euphrasiæ* is now proposed.

Kittlitz, F. H. von. Kupfertafeln zur Naturgeschichte der Vögel. 8vo. Frankfurt am Main, 1832.

Alcedo collaris is figured (t. 14. fig. 1).

Alcedo rufirostris is figured (t. 14. fig. 2).

Alcedo ispida is figured (t. 29. fig. 1).

Alcedo bengalensis is figured (t. 29. fig. 2).

Alcedo cristata (auct. nec Linn.) is figured (t. 29. fig. 3).

Lesson. Centurie Zoologique. 4to. Paris, 1832 (p. 36).

Halcyon atricapilla is figured, and is called *Alcedo brama* on the plate.

Gould, John. Century of Birds from the Himalaya Mountains. Folio. 1832.

Alcedo guttatus is figured.

Lafresnaye. Le Martin-chasseur à coiffe brune. (Mag. de Zool. 1833, pl. 18.)

Dacelo fuscicapilla is a new species. It is the *Alcedo albiventris* of Scopoli.

Meyen, F. J. F. Observationes Zoologicæ. (Nov. Act. Acad. Cæs. Leop.-Carol. Nat. Cur. Band xvi. Suppl. 1, 1834.)

Alcedo stellata (pl. xiv.) is a new species from Chili.

Pearson, J. T. Catalogue of Birds in the Museum of the Asiatic Society. (J. A. S. B. x. 1835, p. 628.)

Halcyon amauroptera is a new species.

Halcyon gurial is a new species.

Rüppell, Dr. E. Neue Wirbelthiere zu der Fauna von Abyssinien gehörig—Vögel. Folio. Frankfurt am Main, 1835.

Alcedo semicærulea, Forsk., is figured.

Alcedo cyanostigma is a new species.

Smith, Dr. Andrew. On South-African Birds, &c. (S. Afr. Quart. Journ. 1836, p. 143.)
Halcyon swainsonii is a new species.
Halcyon senegaloides is a new species. (Figured, Ill. Zool. S. Afr. pl. 68.)

Temminck, C. J. Tableau Méthodique. Folio. Paris, 1836.
Alcedo melanoptera is a new species (*nec* Horsf.). It is *A. gularis* of Kuhl (p. 75).
Alcedo erythrogaster is a new species from St. Jago (p. 75).

Bonaparte, C. L. On Mexican Birds. (P. Z. S. 1837, p. 108.)
Ceryle torquata is described as a new species. (This must be in error, as it is the *Alcedo torquata* of Linnæus; but the statement "*Ceryle torquata*, nob.," is distinct enough in type.)

Gould, J. On New Australian Birds. (P. Z. S. 1837, p. 142.)
Halcyon incinctus is a new species, closely allied to *Halcyon macleayii*. (Afterwards recognized as the female of that species.)

Burton, Staff-Surgeon. On New Birds from the Collection at Fort Pitt, Chatham. (P. Z. S. 1837, p. 89.)
Ceyx microsoma is a new species. It is *Ceyx tridactyla* (Pall.)

Swainson, W. Natural History and Classification of Birds (Cabinet Cycl.), vol. ii. (1837) p. 334.
Syma lessonia is the name proposed for *S. torotoro*, Less., the reason for the change not being given.
Alcyone is a new genus. The type is *A. australis*, Sw., =*Alcyone azurea* (Lath.).
Halcyon rufirostris is named from Buffon's 232nd plate. It is *H. gularis* (Kuhl).

Swainson, W. Birds of West Africa, vol. ii. 12mo. 1837 (p. 93).
Ispida gigantea is a new species. It is the *Alcedo maxima* of Pallas. A figure is given (pl. 2); but the back, which is described as "spotted with white," is not thus depicted in the plate.
Ispida bicincta is a new species. It is the *Ceryle rudis* (L.).
Halcyon torquatus is a new species. It is the *Alcedo malimbica* of Shaw.
Halcyon rufiventer is a new species, but is not distinct from the Abyssinian *H. semicærulea*.
Halcyon cyanotis is a new species. It is *Ispidina picta* (Bodd.).

Gould, J. On the Fissirostres collected by Mr. Darwin. (P. Z. S. 1837, p. 22.)
Halcyon erythrorhynchus is a new species from the Island of St. Jago. (It is the *H. erythrogastra* of Temminck.)

Lafresnaye. Oiseaux nouveaux. (Rev. Zool. 1838, p. 224.)
Dacelo ruffulus is a new species. It is the *Alcedo madagascariensis* of Linnæus.

Muller, S. Verhandelingen over de Naturlijke Geschiedenis der Nederlandsche oberzeesche bezittingen—Land- en Volkenkunde. Folio. Leiden, 1839–44.
Halcyon coronatus is a new species (p. 175).

Eyton, T. C. Catalogue of a Collection of Birds from Malaya. (P. Z. S. 1839, p. 101.)
Halcyon varia is a new species. It is the young of *Halcyon concreta*, Temm.

Jerdon, T. C. Catalogue of the Birds of SouthernIndia. (Madr. Journ. Lit. & Sci. 1839–44.)
Halcyon brunniceps is a new species. It is *Pelargopsis gurial* (Pears.).

Gould, J. On new Birds from Australia. (P. Z. S. 1840, p. 113.)
Halcyon pyrrhopygia is a new species.

Lafresnaye, Baron de. Sur une nouvelle espèce du genre *Ceyx*. (Rev. Zool. 1840, p. 33.)
Ceyx cyanopectus is a new species.

Gray, G. R. Remarks on a Specimen of Kingfisher, supposed to form a new species of the genus *Tanysiptera*. (Ann. Nat. Hist. 1841, p. 237.)
Tanysiptera nympha is a new species.

Hombron et Jacquinot. Description de plusieurs oiseaux nouveaux ou peu connus, provenant de l'expédition autour du monde faite sur les corvettes 'L'Astrolabe' et 'La Zélée.' (Ann. Sci. Nat. n. s. xvi. p. 315, 1841.)
A bird is described from the Tonga Islands as *Alcedo diophthalmo-rufo-ventro* (!) It is *H. macleayii*, the locality being doubtless erroneous.

Strickland, H. E. Commentary on Mr. G. R. Gray's 'Genera of Birds.' (Ann. Nat. Hist. vi. p. 410, 1841.)
Ceryle varia is a new species.

Fraser, L. Zoologia typica. Folio. 1841–42.
Alcedo leucogaster, Fraser, is figured.

Lafresnaye. Descriptions de quelques Oiseaux nouveaux. (Rev. Zool. 1842, p. 134.)
Todirhamphus recurvirostris is a new species.

Gould, J. On new Australian *Halcyonidæ*. (P. Z. S. 1842, p. 72.)
Halcyon platyrostris is a new species from the Navigators' Islands. It is the same as *Halcyon recurvirostris* from the Navigators' Islands.
Halcyon sordidus is a new species from the north coast of Australia.

Fraser, L. On new Species of Birds from Fernando Po. (P. Z. S. 1843, p. 4.)
Halcyon leucogastra is a new species. It is an *Ispidina*.

Gould, J. On new Species of Birds collected during the recent Voyage of H.M.S. 'Sulphur.' (P. Z. S. 1843, p. 103.)
Halcyon saurophaga is a new species from New Guinea. It is *Halcyon albicilla*, Less.

——. Zoology of the Voyage of H.M.S. 'Sulphur'—Birds. Royal 4to. 1844.
Halcyon saurophaga is figured.

Forster, J. R. Descriptiones Animalium, curante H. Lichtenstein. 8vo. Berolini, 1844.

Alcedo cyanea is a new species. It is *Halcyon vagans* (Less.).

Tschudi, J. J. von. Untersuchungen über die Fauna Peruana. Folio. St. Gallen, 1844–46 (p. 253).

Alcedo cabanisii, "Linn.," is a new species. I have followed ornithologists generally in giving Herr von Tschudi credit for this species, as I can hardly suppose that the celebrated German ornithologist after whom it is named was known to Linnæus! It is, of course, a *lapsus calami*, but it reads curiously.

Blyth, E. Notices and Descriptions of various new or little-known Species of Birds. (J. A. S. B. xiv. 1845, p. 190.)

Alcedo grandis is a new species, from Darjiling.

Gould, J. Descriptions of eleven new Species of Australian Birds. (P. Z. S. 1846, p. 19.)

Alcyone pulchra is a new species from Port Essington.

Alcyone diemenensis is a new species from Tasmania.

Blyth, E. Notices and Descriptions of various new or little-known Species of Birds. (J. A. S. B. xv. 1846, p. 11.)

Alcedo moluccensis is a new species.

Todirhamphus occipitalis is a new species from the Nicobars. It is probably *H. chloris*, but may prove to be distinct.

Gray, G. R., and Mitchell, D. G. Genera of Birds, vol. i. Small folio. 1846–47.

A résumé of the family is given, the genera being as follows:—*Dacelo*, with 6 species; *Tanysiptera*, with 2 species; *Halcyon*, with 48 species; *Ceyx*, with 2 species; *Alcedo*, with 19 species, six of which are considered doubtful; *Alcyone*, with 6 species; and *Ceryle*, with 15 species, one of which is doubtful, and four very doubtful. Of the eleven Kingfishers thus enumerated as irrecognizable by Mr. Gray, I have been able to make out four satisfactorily. The plates, for which alone Mr. Mitchell is responsible, represent the young of *Halcyon lindsayi* and *Ispidina picta*. Figures of the characters of the various genera are also given.

Blyth, E. Report of Curator, Zoological Department. (J. A. S. B. xvi. 1847, p. 1180.)

Alcedo nigricans is a new species.

Kaup, J. Die Familie der Eisvögel (*Alcedidæ*). 8vo. Darmstadt, 1848.

Megaceryle is proposed as a subgenus for the reception of *Ceryle guttata* &c.

Chloroceryle for the reception of *C. superciliosa* &c.

Cittura for *Dacelo cyanotis*.

Corythornis is a new genus, the type of which is *Alcedo nais*, sp. n., described from a specimen in the British Museum. It is the young *Corythornis galerita*.

Ispidina is a new genus, the type being *I. picta* (Bodd.).

Ispidina nitida is also a new species, the type of which is in the British Museum. It is *Ispidina natalensis* (Smith).

Gould, J. Birds of Australia, vol. ii. Folio. 1848.

Beautiful plates of *Dacelo gigantea*, *D. leachii*, *D. cervina*, *Halcyon sanctus*, *H. pyrrhopygia*, *H. sordidus*, *H. macleayii*, *Alcyone azurea*, *A. pusilla* are given.

Dacelo cervina is described for the first time.

Gray, G. R. List of Specimens of Birds in the Collection of the British Museum. 12mo. 1848 (p. 51).

The specimens in the British Museum are here enumerated. The types of *Halcyon albicilla*, Gould, *H. superciliosa*, Gray, *Alcedo nais* and *A. nitida* of Kaup, and *Halcyon platyrostris*, Gould, are the most noticeable rarities.

Halcyon superciliosa is here mentioned for the first time, though no description is given. It is the true *Alcedo sacra* of Gmelin.

Peale, Titian. United States Exploring Expedition—Birds. Folio. Philadelphia, 1848.

I have never seen this book; but from Dr. Hartlaub's critical notes on it (Archiv f. Naturg. 1852, p. 93) it appears that

Dacelo nullitorquis was described as a new species. It is *Todirhamphus veneratus* (Lath.).

Dacelo vitiensis is a new species. It is *Halcyon sacra* (Gm.).

Dacelo minima is a new species. It is *Todirhamphus recurvirostris*, Lafr.

Dacelo coronata is a new species. It is *Halcyon sacra* (Gm.).

Jardine, Sir W. Illustrations of Ornithology. 8vo. 1848–1852.

Alcyone cincta is a supposed new species, and is figured under this name on the plate. Afterwards identified with *A. cyanopectus*, Lafr.

Alcedo quadribrachys is figured (pl. 79).

Blyth, E. Catalogue of the Birds in the Museum of the Asiatic Society. 8vo. Calcutta, 1849 (p. 46).

Twenty-five species are named; one more is added in the first appendix, and one more in the addenda to appendix, no. 1 (p. iii). In the further addenda to appendix, no. 3 (p. xxvii), Mr. Blyth believes *Alcedo grandis*, Bl., to be the adult, and *A. nigricans*, Bl., to be the young of *Alcedo euryzona* of Temminck. This view is correct as regards *A. nigricans*; but Mr. Blyth has since altered his opinion as regards *A. grandis*.

Gould, J. On new Species of Birds from Australia. (P. Z. S. 1850, p. 200.)

Tanysiptera sylvia is a new species from Cape York.

Halcyon (*Syma*?) *flavirostris* is a new species from the same locality.

Cassin, John. Descriptions of new Species of Birds of the Genera *Paradisea*, *Pastor*, and *Buceros*, and a proposition to rename others of the genera *Alcyone* and *Hirundo*. (Proc. Phil. Acad. 1850, p. 67.)

A. azurea, apud Lesson, from New Guinea has been mistaken for the true *A. azurea* of Australia, and is proposed to be called *A. lessonii*.

Bonaparte, C. L. Conspectus generum Avium. Royal 8vo. 1850 (p. 153).

Halcyon melanops, *Todiramphus forsteni*, and *Alcedo quadribrachys* are new species, described for the first time under the MS. names bestowed on the specimens in the Leyden Museum by Temminck.

Todiramphus funebris is described for the first time under the MS. name bestowed by Forsten on a specimen in the Leyden Museum.

Halcyon lilacina is the name proposed for the small race of Ruddy Kingfisher. It is the true *H. coromanda* (Lath. ex Sonn.).

Halcyon schlegeli is a new species from Japan. It is the large race of *H. coromanda* (=*H. coromandeliana major*, Schl.).

Actenoides hombroni is the name proposed for *Actenoides variegata* of Hombron and Jacquinot.

The arrangement of the species under the various genera and subgenera is fairly open to criticism; but as the author amplifies his views in a more recent publication, we shall not attempt many remarks on the present occasion. As regards the number of species admitted, 92 in all, I am prepared to admit all but 10, viz.:—1. *Halcyon striolata* (=*Halcyon pygmæa*); 2. *Halcyon cancrophaga*, indeterminable; 3. *Halcyon fusca*=*H. smyrnensis*; 4. *H. schlegeli*=*H. lilacina*; 5. *Todirhamphus chlorocephala*=*T. collaris*; 6. *Todiramphus varius*=*Halcyon concreta*; 7. *Ceyx purpurea*=*Ceyx tridactyla*; 8. *Alcedo cærulea*, indeterminable; 9. *A. vintsioides*=*A. cristata*; 10. *A. nais*=*A. cæruleocephala*.

So that we may fairly state that, in the year 1850, out of the number of Kingfishers recognized at the present day, 82 were then known to science.

Reichenbach, Dr. L. Handbuch der speciellen Ornithologie—Alcedineæ. 8vo, with royal 8vo atlas. Dresden, 1851.

A compilation from the works of previous writers, from whose plates the figures accompanying the present 'Monograph' have been derived. Many new genera are proposed, few of which hold good, while some of the names are so ill-chosen as to be positively unacceptable even to stringent observers of the rule of priority of nomenclature. One hundred and six species are enumerated, of which several are proposed as new; but not one of them is good.

Alcedo pallasii is a new species from Eastern Europe. It is not distinguishable from *A. ispida*.

Halcyon irrorata is the name proposed for Smith's *H. senegaloides*.

Rhamphalcyon is a new genus. It is *Pelargopsis* of Gloger.

Hylcaon (!!) is a new genus for the reception of the *Alcedo melanorhyncha* of Temminck.

Ceryle leucomelanura is a new species from Ceylon. I cannot see any distinction between it and ordinary *C. rudis*.

Amazonis is a new genus formed for the reception of *Ceryle inda* and *C. superciliosa*. It is not structurally different from true *Ceryle*.

Monachalcyon is a new genus, of which the type is *Dacelo gaudichaudi*. Another species

is *M. princeps*. *Dacelo gaudichaudi* is a true *Dacelo*, and not in the least congeneric with *Monachalcyon princeps*, which is really the type of a distinct genus.

Chelicutia is a new genus. The type is *Alcedo chelicuti* of Stanley. This name is of course ignored in the new genus, which has no structural peculiarities to separate it from *Halcyon*.

Lacedo (!!) is a new genus, the type of which is the *Dacelo pulchella* of Horsfield.

Megaceryle cæsia and *M. domingensis* are new species. They are difficult to distinguish from the plates, but seem to be *Ceryle torquata* and *C. alcyon*.

Chloroceryle leucosticta and *C. chalcites* are new species. They appear to be *C. amazonia* and *C. americana*.

Verreaux, J. & E. Description d'espèces nouvelles, rares ou peu connues, d'oiseaux de Gabon. (Rev. et Mag. de Zool. 1851, p. 264.)

Halcyon badia is a new species.

De la Berge. Description d'une nouvelle espèce de Martin-pêcheur. (Rev. Zool. 1851, p. 305, pl. 9.)

Alcedo verreauxii is a new species from Borneo. It is the female of *A. asiatica*.

Cassin, J. Catalogue of the Halcyonidæ in the Collection of the Academy of Natural Sciences of Philadelphia. 8vo. 1852.

A very good collection is contained in the Philadelphia Museum, the most noticeable rarities being all the types of Mr. Gould's Australian species, as follows:—*Alcyone pusilla*, *Halcyon pyrrhopygia*, *H. sordidus*, *Syma flavirostris*, *Dacelo cervina*, *Tanysiptera sylvia*. Besides these the Museum also contains the type of *Alcyone lessoni*.

Strickland, H. E., and Sclater, P. L. List of a Collection of Birds procured by Mr. C. J. Andersson in the Damara Country in South-western Africa. (Contr. to Orn. 1852, p. 141.)

Halcyon damarensis, Strickl., is a new species. It seems to be nothing more than a large South-African race of *H. chelicutensis*.

Hartlaub, Dr. G. Bericht über die Leistungen in der Naturgeschichte der Vögel während des Jahres 1851. 8vo. Berlin, 1852.

In a review of "the *Alcedineæ*" of Reichenbach's 'Handbuch,' the author believes that a bird figured by him as *H. cinnamomina*, from the Marquesas Islands, is really not that species; and he proposes to call it *H. reichenbachii*.

Hombron, H., et Pucheran, Dr. Voyage au Pôle Sud et dans l'Océanie—Zoologie, tome iii. Mammifères et Oiseaux. 8vo. Paris, 1853. And folio Atlas of Plates (1842–53).

The plates were evidently published before the letterpress, as two Kingfishers are figured

as new—*le Martin-chasseur de Salusse*, afterwards found to be *Dacelo cervina*, Gould, and the *Acténoïde variée*, which was named in the text *Actenoides variegata*, but had been previously described by Prince Bonaparte as *Actenoides hombroni*.

Pucheran, Dr. Etudes sur les Types peu connus du Musée de Paris. (Rev. et Mag. de Zool. 1853, p. 384.)

A very valuable essay on the types in the Paris Museum.

a. *Types of Cuvier.*

Ceyx purpureus comprises two distinct species, viz. *Ceyx tridactyla* (Pall.), and *C. rufidorsa*, Strickl.

Alcedo vestita is not recognized by Dr. Pucheran, but is evidently *Ceryle amazonia*.

Alcedo ruficeps is *Halcyon cinnamomeus* (lege *cinnamomina*).

Alcedo albicilla is supposed by Dr. Pucheran to be different from *Halcyon saurophaga* of Gould, but in my opinion is identical.

b. *Types of Vieillot.*

Alcedo cærulescens is the *A. biru* of Horsfield.

Alcedo australasiæ is *H. coronata*, Müller. Both of Vieillot's names stand.

c. *Types of Lesson.*

Alcedo azureus is *A. semitorquata*, Swains.

Dacelo albicilla is *Alcedo albicilla* of Cuvier, and the var. A and B of Lesson are only the young of the same bird.

Dacelo actæon is *Halcyon semicærulea* (Gm.) apud Pucheran; but as the type is from the Cape-Verde Islands it must belong to the closely allied but larger *H. erythrogastra* (Temm.).

Müller, Baron J. W. von. Beiträge zur Ornithologie Afrika's. Folio. Stuttgart, 1853, 1854.

Halcyon dryas is figured (Lief. iii.).

Bonaparte, C. L. Conspectus Volucrum Anisodactylorum. 8vo. 1854 (p. 9).

A brief synopsis of the family is given, the number of genera recognized being 26. The paper is full of errors as regards the correct types of the different genera.

Callalcyon is a new genus, recognized as such for the first time, although previously used as a subgenus in the 'Conspectus.'

Cancrophaga is a new genus for the reception of the African *Halcyones*. The type is *H. badia*, Verreaux. *Halcyon cancrophaga* (Lath.) is proposed to be called *Cancrophaga lathami*. Unfortunately, however, Latham's species cannot be identified.

Cyanalcyon is a new genus. Type *C. pyrrhopygia* (Gould).

Lichtenstein, Dr. H. Nomenclator Avium musei zoologici berolinensis. 8vo. Berlin, 1854.

Ceryle abyssinica is a new species, named but not described. It is not different from *Halcyon chloris.*

Reichenbach, Prof. D. L. Zur Synonymik sumatranischer Vögel. (Journ. f. Orn. 1854, p. 148.)

This article has reference to a paper published in the 'Jahresbericht' of the Natural-History Society of Emden, entitled "Verzeichniss der von dem Herrn Major Kreling zu Padang im J. 1852 geschenkten Vögel," &c. Among those mentioned by Kreling is a supposed new species of Kingfisher, which he calls *Alcedo puella.* Professor Reichenbach identifies it as *Halcyon pileata.* I have never seen the original paper.

Horsfield, T., and Moore, F. Catalogue of the Birds in the Museum of the Hon. East-India Company, i. p. 122 (1854).

Eighteen species are represented in the collection.

Hartlaub, G. Versuch einer synoptischen Ornithologie Westafrica's. (Journ. f. Orn. 1854, p. 1.)

Halcyon dryas is a new species from Prince's Island and St. Thomas.

Müller, Baron J. W. von. Systematisches Verzeichniss der Vögel Afrika's. (Journ. f. Orn. 1858, p. 1.)

A complete list of the Kingfishers of Africa is given. Twenty-seven kinds are enumerated, eight of which are not entitled to a place as separate species.

Verreaux, J. and E. Description d'oiseaux nouveaux de l'Afrique méridionale et occidentale. (Rev. et Mag. de Zool. 1855, pp. 270, 352.)

Notes on the habits of *Halcyon dryas*, *Ispidina cyanotis*, and *Corythornis cristatus* (auct. nec Linn.) are given.

Cassin, John. Descriptions of new Species of African Birds in the Museum of the Academy of Natural Sciences of Philadelphia, collected by Mr. P. B. Du Chaillu in Equatorial Africa. (Proc. Phil. Acad. 1856, p. 156.)

Ispidina lecontei is a new species from the Moonda River.

Hartlaub, Dr. G. System der Ornithologie Westafrika's. 8vo. Bremen, 1857.

A complete handbook to the avifauna of Western Africa. Twenty-three species of Kingfishers are recorded as occurring in this region; but this number must be reduced by seven, viz. *Halcyon cancrophaga* (Lath.), *Alcedo senegalensis*, and *Ceryle tricolor*, which are indeterminable, while *Halcyon rufiventris*=*H. semicærulea*, *Alcedo nitida* is not West African, but is *A. natalensis*, *A. nais*=*A. cæruleocephala*, and *Ceryle gigantea*=*C. maxima.* Add as distinct *Halcyon erythrogastra* (Temm.) from the Cape-Verde Islands, and the number of West-African Kingfishers will be found to be seventeen.

Gould, John. Description of three new and very beautiful Species of Birds from Guatemala and from the Island of Lombock. (P. Z. S. 1857, p. 65.)

Contains a description of *Halcyon fulgidus* from Lombock; type of the genus *Caridonax* of Cabanis and Heine (Mus. Hein. Th. ii. p. 162, 1860).

Verreaux, J. Description d'Oiseaux nouveaux. (Rev. et Mag. de Zool. 1858, p. 305.)

Cyanalcyon leucopygius is a new species from the Solomon Islands.

Gray, G. R. List of the Birds, with Descriptions of new Species, obtained by Mr. Alfred R. Wallace in the Aru and Ké Islands. (P. Z. S. 1858, p. 169.)

Dacelo tyro is a new species. It is figured (pl. cxxxiii.) from Aru.

Halcyon sordida is a variety of the true *H. sordida* (afterwards named *Sauropatis grayi* by Cabanis and Heine).

Tanysiptera hydrocharis is a new species.

Cassin, John. U. S. Exploring Expedition—Mammalogy and Ornithology. Royal 4to. Philadelphia, 1858.

After giving the species obtained by the Expedition, the author produces an admirable essay on the genus *Todiramphus* (auct. nec Less.), which clears up a great deal of confusion, but, from insufficient material at the author's command, is defective in some few points.

Gray, G. R. Catalogue of the Birds of the Tropical Islands of the Pacific Ocean in the Collection of the British Museum. 8vo. 1859.

Halcyon (*Actenoides*) *jacquinoti* is supposed to be a new species, founded on a bird mentioned by Hombron and Jacquinot (Ann. Sci. Nat. n. s. xvi. p. 315).

——. List of Birds lately sent by Mr. A. R. Wallace from Dorey, or Dorery, New Guinea. (P. Z. S. 1859, p. 153.)

Tanysiptera galatea is a new species.

Heine, F. Ueber einige neue oder weniger bekannter Vögel des "Museum Heineanum." (Journ. f. Orn. 1859, p. 406.)

Tanysiptera margarethæ is a new species.

Uralcyon is a new genus. The type is *Tanysiptera sylvia*, Gould.

Gould, J. Birds of Asia, part xii. Folio. June 1st, 1860.

Dacelo tyro, *Halcyon atricapillus*, *H. fulgidus*, and *H. omnicolor* are figured.

Cabanis, Dr. J., and Heine, F. Museum Heineanum, Theil ii. 8vo. 1860 (p. 143).

Containing a list, with full synonymy, of the various species contained in Heine's Museum. Notes on allied species are added; and altogether this work is one of the most valuable and careful expositions of the family *Alcedinidæ* ever published.

Alcedo sondaica is recognized as a distinct species from *A. bengalensis*. It is the *Alcedo bengalensis*, var. *sondaica* of Reichenbach.

Ceryle varia, Strickl., is the name retained for the eastern form of *C. rudis*.

Ichthynomus is a new genus. The type is *Ceryle maxima* of Pallas.

Pagurothera is a new genus for the reception of the section of the genus *Halcyon* with striped heads, of which *H. chelicuti* is the type. *Chelicutia* of Reichenbach is synonymous; but this name is rejected as "barbarous."

Entomobia is a new genus for the reception of certain eastern *Halcyones*. *E. cyanoventris* is the type.

Sauropatis is a new name proposed instead of the usually assigned name of *Todirhamphus* auct. (nec Less.), which is considered "barbarous." The type is *Sauropatis sancta* (V. & H.).

Sauropatis grayi is a new species from the Aru Islands. It is the *H. sordida* of Gray (nec Gould).

Caridagrus is a new genus formed for the reception of *C. concretus* (Temm.).

Astacophilus is a new genus for the reception of *A. lindsayi* (Vig.).

Caridonax is a new genus for the reception of *C. fulgidus* (Gould).

Carcineutes is a new genus for the reception of *C. pulchellus* (Horsf.). It is the genus *Lacedo* of Reichenbach, this name being too "barbarous" to be entertained.

Sauromarptis is a new genus for the reception of *S. gaudichaudi* (Q. & G.).

Paralcyon is the genus employed instead of *Dacelo*, Leach, which is considered "barbarous."

Heine, F. Ueber zwei neue Waldlieste (*Sauropatis*). (Journ. f. Orn. 1860, p. 183.)

Sauropatis juliæ is a new species from New Hebrides.

S. Reichenbachii is *Todirhamphus cinnamominus*, Reich., from the Marquesas Islands (nec *H. cinnamomina*, Sw.). Herr Heine seems unaware that Dr. Hartlaub had already separated this bird under the self-same name.

Gray, G. R. List of Birds collected by Mr. Wallace at the Molucca Islands, with Descriptions of new Species (P. Z. S. 1860, p. 341).

Tanysiptera nais is a new species from Amboina.

T. isis is a new species from Batchian and Gilolo. It is *T. margarethæ* of Heine.

T. sabrina is a new species from Kaioa Island.

Ceyx uropygialis is a new species from Batchian and Ternate.

Alcyone affinis is a new species from Batchian.

Gould, J. Birds of Asia, part xiii. May 1st, 1861.

Halcyon fusca and *H. gularis* are figured.

——. Birds of Asia, part xiv. May 1st, 1862.

Alcedo bengalensis is figured.

Wallace, A. R. On some new or rare Birds from New Guinea. (P. Z. S. 1862, p. 164.)

Halcyon nigrocyanea is a new species, of which a figure (of the female) is given (pl. xix.).

——. List of Birds collected in the Island of Bouru. (P. Z. S. 1863, p. 18.)

Tanysiptera acis is a new species.

Ceyx cajeli is a new species, of which a figure is given.

A complete list of the species of *Tanysiptera* is given.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas—Alcédines. Mai 1863.

A résumé of all the species contained in the great collection at Leyden. The author divides the family into two genera, *Alcedo* and *Dacelo*, using the generally accepted genera in a subgeneric rank only. The following points call for remark. *Alcedo cyanostigma* (p. 11) is considered distinct from *A. cristata* (auct. nec Linn.), of which it is the young. *Alcedo amauroptera* is considered to be the same as *A. leucocephala*; but it is a good species, as Professor Schlegel now freely admits.

Alcedo picturata is a new species from South Africa. It is *A. natalensis*, Smith.

Alcedo lecontei is not that species, but *A. ruficeps*, Hartl.

Dacelo tyro is considered to be a stage of plumage of *D. gaudichaudi*, but is afterward admitted to be distinct.

Dacelo grayi is a new species from New Hebrides. It is the *Sauropatis juliæ*, Heine.

Dacelo sacra is not the true *H. sacra*, but is *Todirhamphus tutus* (Gm.).

Only four species of *Tanysiptera* are recognized—the single remark we have to make being that, although *T. sabrina* is united to *T. doris*, Professor Schlegel had at that time not seen the true *T. sabrina*, which is from Kaioa.

Dacelo rubra is *Ceyx tridactyla* (Pall.).

Heuglin, Th. von. Ueber Alcedinen und Meropiden Nordost-Afrika's. (Journ. f. Orn. 1864, p. 329.)

A list of the Kingfishers of North-eastern Africa is given, with their geographical distribution.

Schlegel, H. De Vogels van Nederlandsch Indië. Royal 4to. Haarlem, 1864. Monographie 2. Ijsvogels (Martins-pêcheurs).

A résumé in Dutch and French of all the Kingfishers found in the Dutch possessions in the East Indies. It is derived from his former list of *Alcédines* in the Catalogue of the Leyden Museum, and is accompanied by excellent figures of all the species treated of.

Pelzeln, A. von. Reise der österreichischen Fregatte 'Novara'—Vögel. 4to. Wien, 1865.

A list of the species obtained by the Expedition is given. Good notes are published on *Halcyon chloris* and *Todirhamphus veneratus*.

Schlegel, H. Observations zoologiques, II. (Nederl. Tydschrift voor de Dierkunde, vol. iii. p. 187, 1865–66.)

Dacelo fallax is a new species.

Schlegel, H. Notice sur le sous-genre *Tanysiptera*. (*L. c.* p. 269.)

A most elaborate and exhaustive article, based upon the material in the Leyden Museum. The object is to show that there are only three or four species, and not so many as are admitted by Mr. Wallace and myself.

Verreaux, J. Description de quelques oiseaux nouveaux appartenant à la collection zoologique du Muséum. (Nouv. Arch. du Mus. ii. Bull. p. 21, 1866.)

Tanysiptera riedeli is a new species.

Diggles, S. Ornithology of Australia. Small folio. Queensland, 1867–69.

Part 1. *Dacelo gigantea* is figured.

Part 2. *Halcyon sanctus* and *H. macleayi* are figured; but the figure of the former bird is taken from a young *H. macleayi*.

Part 12. *Dacelo leachii* is figured.

Part 15. *Tanysiptera sylvia*, ad. et juv., is figured.

Finsch, O., and Hartlaub, G. Beitrag zur Fauna Centralpolynesiens; Ornithologie der Viti-, Samoa- und Tonga-Inseln. 8vo. Halle, 1867.

The Kingfishers are here most elaborately treated, the synonymy being carefully worked out.

Halcyon pealei (p. 39) and *H. cassini* (p. 40) are described as new; but I believe them to be only stages of *H. sacra*.

Layard. Birds of South Africa. 8vo. Cape Town, 1867.

A list of South-African Kingfishers is given (*cf.* Sharpe, Ibis, 1869, p. 275).

Bocage, J. V. Barboza du. Aves das possessões portuguezas da Africa occidental que existem no Museu de Lisboa. (Jorn. Acad. R. das Sciencias de Lisboa, 1867, i. p. 129.)

A list of the species in the Lisbon Museum is given.

Sharpe, R. B. On two new or little-known Kingfishers belonging to the Genera *Ceyx* or *Cittura*. (P. Z. S. 1868, p. 270.)

Ceyx wallacei is a new species from the Sula Islands.

Cittura sanghirensis is a new species from Sanghir.

Gould, John. Description of a new Species of the Genus *Ceyx*. (P. Z. S. 1868, p. 404.)

Ceyx philippinensis is a new species from Manila.

Sharpe, R. B. On the Genus *Ceyx*. (P. Z. S. 1868, p. 587.)

A list of the species known up to date is given.

Ceyx dillwynii is a new species from Labuan.

Peters, W. Vorläufige Mittheilung über einige neue Vogelarten aus Mossambique. (Journ. f. Orn. 1868, p. 131.)

H. orientalis is a new species from Inhambane.

Gould, J. Description of *Ceryle sharpii*, a new Species fromt he Gaboon. (Ann. Nat. Hist. 1869, p. 271.)

Ceryle sharpei is described.

——. Description of a new Species of *Dacelo* from North-western Australia. (P. Z. S. 1869, p. 602.)

Dacelo occidentalis is described.

Sharpe, R. B. On the Kingfishers of South Africa. (Ibis, 1869, p. 275.)

Critical remarks on the *Alcedinidæ* of Mr. Layard's book.

Salvadori, T. Monografia del genere *Ceyx*. (Atti del R. Accad. delle Scienze di Torino, iv. 1869, p. 440.)

Ceycopsis is a new genus. The type is *Dacelo fallax* of Schlegel.

Ceyx sharpei is a new species from Borneo. It is figured, and stated to have been confounded by Reichenbach under the name of *C. tridactyla*.

Ceyx innominata is a new species. It is the *C. rufidorsa* auct., nec Strickl.; but an examination of the type at Cambridge shows that it is also *C. rufidorsa* of Strickland (*cf.* Sharpe, P. Z. S. 1869, p. 510).

The above is one of the best papers ever written on any of the genera of the *Alcedinidæ*, and is very exhaustive.

Sharpe, R. B. Additional Notes on the Genus *Ceyx*. (P. Z. S. 1869, p. 507.)

Critical remarks on Count Salvadori's paper above mentioned.

——. On a new Kingfisher belonging to the Genus *Tanysiptera*. (P. Z. S. 1869, p. 630.)

Tanysiptera ellioti is a new species.

Gray, G. R. Hand-list of Genera and Species of Birds, Part I. 8vo. 1869.

A complete list of Kingfishers is given up to the present date.

Alcedo hartlaubi is a supposed new species from Ashanti; but I cannot see the distinctness from true *Corythornis cyanostigma*.

Sharpe, R. B. On the Genus *Pelargopsis*. (P. Z. S. 1870, p. 61.)

An attempt to clear up the confusion existing respecting the Kingfishers of the genus *Pelargopsis*.

P. gouldi is a new species from the Philippines.

P. fraseri is the *P. leucocephala* auct., nec Gm., from Java. It is also the true *Alcedo capensis* of Linnæus; but as no such bird exists at the Cape of Good Hope, the name cannot be retained.

P. burmanica is a new species.

P. floresiana is a new species.

P. malaccensis may be regarded as a subspecies of *P. gurial*, but may have to be separated as a species.

Finsch, Dr. O., and Hartlaub, Dr. G. Ornithologie Ost-Afrika's. (Von der Decken's Reise, iv. p. 163, 1870.)

Halcyon chelicutensis is the more grammatical reading proposed for *H. chelicuti* (Stanl.).

Sharpe, R. B. A Monograph of the *Alcedinidæ*, or Kingfishers. Imp. 8vo. Published by the Author, 1868–71.

Tanysiptera emiliæ is a new species from Raou.

Pelargopsis malaccensis, provisionally separated (P. Z. S. 1870, p. 67), is declared to be a good species.

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SUB-FAMILY

ALCEDININÆ.

ALCEDO ISPIDA.

ALCEDO ISPIDA.

(COMMON KINGFISHER.)

Alcedo ispida	Linn. Syst. Nat. I, p. 179 (1766).
Alcedo subispida	Brehm, Vög. Deutschl. I, p. 149 (1831).
Alcedo advena	Brehm, Vög. Deutschl. I, p. 150, t. XI, fig. 2 (1831).
Alcedo pallasii	Reich. Handb. *Alced.* p. 3, t. cccxcii, fig. 3043-44, t. cccxciii, figs. 3045-46 (1851).

A. torque pectorali nullâ: abdomine lætè castaneo: tectricibus alarum cyaneo conspicuè terminatis: regione parroticâ rufâ: major: rostro brevi: suprà viridi-cyanea: capite cyaneo fasciato.

Hab. in regione Palæarcticâ.

Male. Above blue, the base of the feathers being greyish-black; head crested, barred with bright blue; upper part of the back and scapulars green; rest of the back, rump and upper tail-coverts beautiful rich cobalt; wing-coverts green, the greater coverts inclining to blue, distinctly spotted at the tip of each feather with bright bars of cobalt; quills blackish, pale rufous at the base of the inner web, the outer web broadly washed with greenish blue; tail deep blue inclining to indigo above, black beneath; lores and ear-coverts light chesnut; cheeks blue; throat, and a patch of feathers along the sides of the neck white, slightly tinged with fulvous; rest of the under surface of the body rich chesnut with a patch of blue feathers on the sides of the upper part of the breast; bill black; feet red. Total length 7·5 inches, of bill from front 1·7, from gape 2·0, wing 2·95, tail 1·5, tarsus 0·3, middle toe 0·55, hind toe 0·25.

Female. Exactly similar to the male, but has the base of the lower mandible orange.

Young. Similar to the adults, but has the bill shorter and more mixed with orange, and the feathers of the upper part of the breast edged with greyish and tinged with a slight dusky-blue lustre.

[By the kind permission of my friend Mr. H. E. Dresser, who is my colleague in the forthcoming "History of the Birds of Europe," I have taken this account of the Kingfisher from the MSS. prepared for the last-named work. Nor shall we regret this circumstance, as although we have endeavoured to make the present account as complete as we can, it is quite possible to make it more perfect, and I, therefore, appeal to all my friends who have aided me in the present work to supplement as far as possible the details here given, so that when the species has to be treated of in the "Birds of Europe" the account may be quite complete. R. B. S.]

The *Corvus aegyptius* of Hasselquist, from which Latham took the description of his "Egyptian Gracle," on which again Gmelin founded his *Gracula atthis*, is very puzzling, for Hasselquist's description suits that of *Alcedo ispida* very well; but he says that it lives in Egypt in trees (!), feeds on insects, and that he has found the remains of centipedes and scorpions in the stomach. In any case, it is impossible to say whether the bird mentioned by Hasselquist, if a Kingfisher at all, were *A. ispida* or *A. bengalensis*, and as the question of the determination is of little moment, we have expunged *Gracula atthis* from our list of synonyms.

Mr. Gould has beautiful specimens of the Common Kingfisher from the Crimea, which appear to be identically the same as our British bird, and it is impossible to find a definite character on which to found specific distinction. Nevertheless, Professor Reichenbach has separated the bird from Eastern Europe as a distinct species. The worthy Professor has been singularly unfortunate in the species he has created among the "Alcedinidæ," and we fear that in the present instance he has not been more successful than usual. Nevertheless we state his case in his own words, leaving it to the judgment of Ornithologists to pronounce upon the specific validity of *Alcedo pallasii*:—

"General colour as in *A. ispida*, but the throat sharply divided by a straight defined line from the reddish-brown breast. The young bird also differs from that of the former by the sharply defined white throat and greyish-brown under-surface. Besides the well characterized difference in the colour, particularly in the plumage of the young, there is a good difference in the short thick-set build of the foot and toes, as also of the toes and nails, the latter in particular being, though shorter, twice as high as in *A. ispida*, that of the latter being scarcely one millimétre, of the present species two millimétres. It is found on the large rivers of Asiatic Russia and on the Volga; according to Eversman, it is rare on the latter river, occurring as far north as the Kama. It is more plentiful at Irtisch, notably more so on the rivers of the Altai and Jenessei, and in the whole of Western (but not Eastern) Siberia, than on the lakes. The three young birds which I have before me, of which I figure two, were shot in the end of July, 1849, on the Lake Noor Saisan in Sangarian Tartary. Old birds appear to pass from the East through Germany in the winter, and have been shot in Saxony, but I have never seen young birds of this species in Germany, and it, therefore, probably does not breed with us. If *Alcedo advena* of Brehm is this species I cannot say, as the difference in the skull, on which this learned author founds most of his species, cannot be observed, unless the bird is freshly received."

Now it is evident that Reichenbach inserted the localities for his species on the authorities of Pallas and Eversman; but, on the other hand, Dr. Von Schrenk, who has actually examined specimens from the Altai Mountains, refers them to *Alcedo bengalensis*, the small representative of *Alcedo ispida*. We fear that among the host of imaginary species already burdening the pages of Ornithology, the *Alcedo pallasii* of Professor Reichenbach must be added as another victim.

Our Common Kingfisher is spread all over Europe, but does not extend its range far north. As a straggler it occurs in Scandinavia, but has not been known to breed in Sweden, though Kjærbölling states that it has been found nesting in Denmark. In these northern latitudes it has only been observed as an occasional visitant during the latter part of the summer and autumn, its farthest summer range to the north being probably the Baltic Provinces. In Great Britain it is generally distributed and is subject to a partial migration, a few remaining with us during the winter season. According to a note communicated to Mr. Gould's "Birds of Great Britain" by H. G. the Duke of Argyll, it visits Argyleshire only occasionally and at distant intervals, and never remains long; indeed, in Scotland it is far scarcer than in England.

As regards its distribution throughout the British Islands, Mr. A. G. More, in his admirable paper on the distribution of our native birds during the breeding season, says it is "thinly scattered throughout England and the south of Scotland. Breeds regularly in

Ayr, occasionally in Lanark, regularly in nearly all the counties of sub province 28 (see his map, Ibis, 1865, p. 138), regularly in Stirling and Clackmannan, and perhaps every year in Perthshire, where it is very rare."

Mr. Thompson writes respecting its distribution in Ireland as follows (Nat. Hist. of Ireland, vol. I. p. 369):—"It is nowhere numerous; as many individuals, however, would seem to be distributed over districts favourable for their abode in Ireland as in any other country. There is decidedly a partial migration or movement of these birds. They came regularly every year about the same time in the month of August to ponds at our own residence in the country, contiguous to the mountains, and elevated 500 feet above the sea. They remained generally for about six weeks, and once only were seen in winter. Their first appearance in the year 1831 was on the 4th August; in 1833 on the 14th; in 1834 on the 14th; and in 1835 on the 17th of that month."

Our friend M. Jules Verreaux tells us that in France it is generally distributed and breeds everywhere, but is now becoming rare in some districts owing to the superstition of the peasants, who shoot and mummify the bird, believing that when hung up with extended wings the beak will always point to the quarter from which the wind blows.

Bailly says that it is resident in Switzerland and Savoy, but that it is more numerous in the summer, a partial migration taking place in winter.

Lord Lilford and Mr. Howard Saunders have both noticed the species in Spain, and Mr. A. C. Smith records it as "common in Portugal." In Sardinia it is also common according to Count Salvadori, and in Tuscany is a resident as recorded by Savi. In the lately-published book on the "Birds of Lombardy" by Signor E. Bettoni, a figure of the young bird is given and we are informed that it breeds in this country.

Mr. C. A. Wright (Ibis, 1864, p. 73) says that in Malta the Common Kingfisher, which is called by the Maltese *Ghasfur ta San Martin*, is "an annual visitor; generally seen about the sea-shore in pairs. Arrives in August and September, and occasionally observed in the winter months. One was killed on the 14th March, 1862. Said to breed here sometimes."

In Tangiers and Eastern Morocco, Mr. C. F. Tyrwhitt Drake (Ibis, 1867, p. 425) found the Kingfisher "common and breeding." Both Malherbe and Loche record it as common in Algeria, but do not state if it breeds, though no doubt it does so.

To Egypt we believe it certainly extends, as Capt. Shelley obtained specimens which appear to us to belong to this species, but at the same time *Alcedo bengalensis* also occurs. Mr. E. C. Taylor, an excellent Field Naturalist, writing on *A. ispida*, states (Ibis, 1859, p. 47) that he "saw this bird once only near Atfeh, a place where the Mahmoudeeh Canal joins the Nile;" and again (Ibis, 1867, p. 56) he writes:—"By no means a common bird. I saw it more frequently near Cairo than anywhere else." Now we think it very probable that the last-named birds observed by Mr. Taylor were *Alcedo bengalensis*, for as observed in the account of this species (*vide infrà*) Mr. J. Keast Lord obtained at Shoobra, near Cairo, a specimen of *A. bengalensis* with the longest bill we ever saw. Messrs. Eaton and Baird have lately brought the little Indian Kingfisher from Egypt, but our friend Captain Shelley, who specially devoted some time to the investigation of the subject, brought back several specimens, all of which, however, apparently belong to the Common Kingfisher. It will, therefore, be evident to Ornithologists that the reason of the occurrence of both species of *Alcedo* in Egypt is veiled in much obscurity. For our part, we can only account for the fact of one Naturalist meeting with one species while another equally meets with the other, by the supposition that in Egypt the ranges of both species inosculate, and further, that their occurrence is uncertain, each bird being more common in that country one year than another.

The Rev. Dr. Tristram gives (Ibis, 1866, p. 84) the following particulars respecting its distribution in Palestine:—"*Alcedo ispida* is scattered everywhere throughout the country wherever there are streams, and also along the Mediterranean coasts; but it is nowhere very abundant, though evidently unaffected by climate, fishing indifferently in the little

torrents of the Lebanon, among the ruined columns of Tyre, or in the seething swamps of the Jordan valley. All three species (*A. ispida, C. rudis*, and *H. smyrnensis*) resort to the shores of the Dead Sea, attracted by the shoals of fishes which are brought down by the fresh water streams and soon stupified by the brine of the Lake. One morning on the western side, Mr. Shepherd shot all three species within a few minutes of each other; generally, however, we met with *A. ispida* in more secluded localities, and on the banks of smaller streams than the others, and even in ditches. In the Lebanon it is the only species."

In Corfu and Epirus, Lord Lilford (Ibis, 1860, p. 236) found it "very abundant and resident;" and in Turkey, Messrs. Elwes and Buckley (Ibis, 1870, p. 189) say that it is not uncommon in suitable localities. Captain Sperling likewise observes (Ibis, 1864, p. 282) that "it is common about the marshes and salt-water lagoons of Greece." Mr. Robson has sent several specimens from Asia Minor and Turkey, in both of which countries it appears not uncommon.

Demidoff says (Voy Russ. Merid. 3, p. 207) that "the Kingfisher lives in pairs on the shady banks of all the rivers which empty themselves into the Black Sea; towards the middle of April it arrives on the marshes which are found in the neighbourhood of Odessa. It is pretty generally distributed throughout the province of Ghouriel."

De Filippi says that he saw it once at Nickbey in Persia, but it is probable that the bird here observed was *A. bengalensis*, and we suspect that the *A. ispida* of Hutton (J.A.S. B. xvi. pt. II, p. 777), from Kandahar, where it is "found on the banks of rivers all the year through," is referable to the same bird.

To the eastward the range of the Common Kingfisher is difficult to determine, for it has certainly been often confounded with *A. bengalensis*, but it probably does not extend far beyond the Ural, if indeed it crosses this barrier.

Beautiful as many of our British Birds undoubtedly are, for brilliancy of plumage the Kingfisher stands unsurpassed; and although it cannot boast an elegant form, it is, nevertheless, a general favourite on account of its beautiful appearance. Scarcely any of our rivers are without the attendant Kingfisher, and even dwellers in the neighbourhood of London may make its acquaintance, for the banks of the Thames are enlivened by its presence, while we have on one occasion seen it flying on the ornamental water in St. James's Park. In the list of birds observed wild in the Zoological Gardens, published by Mr. Louis Fraser (P.Z.S., 1863, p. 159), the Kingfisher is not included, but we have seen one on a single occasion sitting over the water in one of the ponds, probably attracted by the notes of its companions in the Aviary in the Fish-house. When in a wild state, flying along the banks of a stream or sitting patiently at watch for its finny prey, the Kingfisher is a beautiful sight. Often has it been our good fortune to witness the bird at close quarters, but this is by no means easy to accomplish, owing to the extreme wariness of the bird from repeated persecution. The presence of the Kingfisher in one's neighbourhood can be detected from some distance by the faint cry which falls upon the ear from afar. This note, which is a shrill but not unmusical scream, generally consists of two syllables, but is very difficult to render in language. Naumann gives it as "*ti-it*," which is by no means a bad representation of the cry, and these syllables are quickly repeated as the bird leaves its perch and skims over the stream. The flight is rapid and very direct, the bird speeding like a bullet a little height above the surface of the water. When suddenly disturbed it utters its cry shortly after leaving its perch, and then flies for some distance in silence, but when passing unmolested from one resting-place to another, its shrill note may be heard at frequent intervals. Just before perching the cry is uttered three or four times successively—*ti-ti-ti*. When resting it sits uprightly with the glance directed downwards, motionlessly scanning the stream beneath, intent on the capture of any fish or water insect which may come within its reach. Its unerring dive seldom proves fruitless, and when secured, a few smart raps on its perch, to which the bird always returns, deprives the victim of life, after which it is immediately swallowed. Except in the early morning it seldom chooses a very open position

for its resting-place, but in the autumn when the migration is in progress, at break of day it is not unusual to see two or even three birds in company on a rail or on the side of a punt; in the day time, however, it loves solitude, and seldom more than one can be seen at once, and then it affects more shady and secluded haunts. In general it is a lonely bird, jealous of intrusion, especially from individuals of its own species. Each pair appear to choose and maintain a particular hunting ground, and should one Kingfisher enter upon the domain of another, it is speedily and effectually ousted by the rightful owner with cries of rage. So fierce is the animosity displayed by these birds, that when excited in combat they fly heedless of obstacles, and thus occasionally meet their death in their headlong career; not long ago, indeed, an instance was recorded in the "Field," by Mr. E. Ward, of two Kingfishers which flew with such violence against a window, that both pursuer and pursued met their death on the spot. Mr. Alfred Denison possesses these identical specimens, which were stuffed to commemorate the occurrence.

In the above details of the habits of our Kingfisher, the results of our observations differ considerably from those of Dr. Kütter as hereinafter given, and we can only reconcile the discrepancy by supposing that the Kingfisher in Germany is a more pacific bird than its English congener.

The late Mr. Briggs of Cookham, a most accurate observer of the habits of our British Birds, and one whose loss cannot sufficiently be deplored, has told us that he has often watched the Kingfisher dive several times from its post without apparently capturing any prey, and that its object in so doing he believed to be, by disturbing the water, to attract the small fish and insects. To this hypothesis we cannot adhere, and our opinion is that the bird merely plunges in order to wash itself, and Mr. Frederick Bond, the well-known Mentor of British Ornithologists, concurs in this opinion; we were also on one occasion witnesses to a freak on the part of a Kingfisher which was wildly dashing backwards and forwards in a small brook, apparently taking a bath and screaming vociferously all the while.

The young, even when in the nest, are noisy, and their presence can be detected in the breeding-hole by the cries they emit. When able to fly they sit in secluded spots in the neighbourhood of the nest, and are very clamorous for food. The old birds evince great solicitude for their offspring, and when an intruder is seen in the neighbourhood of their young may be observed flying restlessly from point to point with the food in the bill intended for the little Kingfishers, who, unsuspecting danger, answer the anxious cry of the parent bird from the depths of the shady retreat where they are awaiting its return. It is to be recorded that when only just able to fly the note of the young exactly resemble the disyllabic cry of the adult bird, but is of course not so powerful.

The Kingfisher, though essentially frequenting water, by no means confines its choice of a breeding locality to the vicinity of that element, and the nest is not unfrequently found at some distance from the nearest stream. We know ourselves of an instance where a pair of birds selected a hole in a garden-bank in Dr. Goolden's grounds at Maidenhead, at least a mile away from any water, at a very little height from the ground, and within easy reach of the passers by. In our opinion, the nature of the soil has more to do with the choice of the nesting-hole, its pliability for tunneling being the most essential requirement.

We may add that the Kingfisher varies its food according to the localities it frequents, and although on the rivers its usual food consists of fish and water insects, on visiting the sea-shore it feeds on shrimps, &c., while our friend Mr. Gatcombe tells us that one was brought to him near Plymouth which had the stomach literally crammed with small crabs.

The following very interesting account of the habits of the Kingfisher is from the pen of Dr. Kütter (Journ. f. Orn. 1866, p. 38). He says:—

"I have often observed that this bird not only seizes insects when in want of its chief article of food or of the first food for its young, but also at other times, and I have proved this by examining the contents of the stomach out of the breeding season. It was, therefore, doubly interesting to me to see Heuglin's notes in his work, in which he states that certain

of the African Kingfishers live entirely on such food. Our Kingfisher is not an unsociable bird, and I have sometimes observed one of these small feathered fishermen pass by the haunt of another without the latter even moving a wing, and I could be sure that they were not a pair belonging to each other. The usual breeding-time I have found to be April, May and June. Generally they have but one brood in the year, but if anything happens to the first the female not rarely has another, and it is such a brood that one finds in July or August. This I determined by marking the bills of three females with a file and afterwards catching them on the nest. The position of the nest-hole I have found in a straight bank, which is not necessarily washed by the water. I have as an exception found it in a bank about twenty paces from water, and divided from it by a well-frequented path. The circular hole, about two or three inches in diameter, in low banks is just under the edge, and in high banks about the middle or below that. It narrows slightly, and rises gradually or runs quite horizontal, and is tunneled a foot and a half to as much as three feet and a half into the bank. I have sometimes known them to turn off to one side, but in such cases have invariably found roots or stones to be the obstacle to its continuation in a direct line. The well-known grooved marks on each side of the base are more or less distinctly worked out in the neighbourhood of the outlet, or in much-used holes are quite effaced. The oven-like or lentile-shaped chamber at the end is evenly domed, generally six inches wide and four inches high, and the bird only begins to furnish it with discarded bones and scales of fish which it has eaten, after commencing to lay the eggs. Newly-finished chambers without eggs never have a trace of this peculiar nesting-material, which during the time of laying the eggs and sitting gradually increases in size and accumulates so that at last it forms a foundation evenly arranged, several lines high. When incubation has commenced one never finds an egg on the bare earth, and indeed the eggs require from their number and size as do also the naked young, in addition to the warmth of the mother, some protection from the bad conductor of warmth in the shape of the chilly earth; so that it is to me perfectly incomprehensible how people can speak of a *chance* collection of these remains in the nesting-chamber. Moreover, these remains have the same physical properties and serve exactly the same end as a foundation of dry grass, straw, &c., which birds habitually frequenting the water can the less easily make use of. I should add that the digging of the hole, which seems so great an undertaking for so small a bird, is completed in a comparatively short time, and I can show that the space of scarcely a week suffices in some instances. In the eager picking and digging, often in hard sand rubble, the beak is much used; and the bird appears from choice to work *with the upper mandible only*, for I have often found it shortened one or two lines, and in one instance one-third of the length was wanting, having, as it seems, been broken off. I never found them in colonies, and when several holes are close together only one is inhabited. The shortest distance between inhabited holes was about fifty paces. I have, without exception, found seven to constitute the full complement of eggs, even in a second brood. I have been unable to prove or disprove that 15-16 days, as stated, is the period of incubation."

Respecting the use of the upper mandible in digging, Dr. Kütter adds the following footnote:—

"This is easily to be understood on anatomical grounds, inasmuch as the upper mandible is fixed fast to the skull; whereas the weaker under mandible, being attached to the skull only by joints and sinews, can less easily withstand the hard work of digging. It is probable that on these grounds the Woodpeckers work, in excavating their holes, with the upper mandible and not with closed bill, but I cannot state this from my own observation."

The following letter on the "Nesting of the Kingfisher," from the pen of that well-known Naturalist Mr. George Dawson Rowley, appeared in the *Field* for 1866, addressed to the Editor, and is of sufficient interest to be transcribed *verbatim*:—

"Sir,—Though the subject of the Kingfisher (*Alcedo ispida*) is somewhat stale, yet, in consequence of the remarks which I have just read in the October *Quarterly* on 'Homes Without Hands,' I send you the following notes, made this spring, in order to set at rest, if possible, a mistake regarding the breeding of this bird. Modern writers on the Kingfisher are hardly more free from error than even Ovid or Pliny. The bird is a true miner, and makes a nest of fish bones: but, as no rule is without an exception, where it cannot find a suitable bank to bore in, it has been known to nidificate in abnormal situations; and when abundance of proper fish are not to be caught, it is obliged to do without bones.

"From many years' constant watching, I can exactly tell the probable position of the hole, and the day it will be begun. Accordingly, on Thursday, March 29, I sent two witnesses to a particular spot on the river Ouse, S. Neots, Huntingdonshire. They observed that there was on that day positively no hole of any kind, or vestige of a hole, in that bank.

"On Easter Monday, April 2, I sent a keeper to the place. He reported the hole as begun. On the same day I went in a boat, and, putting a reed up, found it by actual measurement about fifteen inches deep, the moulds being quite fresh outside. Droppings of the bird (which was now seen constantly leaving the hole) were visible in two places. There was also a shallow hole a little to the left of the above-mentioned one. This was a failure—either from caprice or some other cause, abandoned. We observe the same in Woodpeckers, which will sometimes bore in three or four places before they get one to their liking—a circumstance I particularly remarked in a pair of the Greater Spotted Woodpeckers *(P. major)* last spring. Between March 29 and April 2, the Kingfisher had made two holes. I thought it best now to leave the place, only receiving from the keeper each morning a report, as he went by in his boat, that the bird was going on.

"Saturday, April 7.—I made a memorandum: 'I again observe fresh moulds, but not, as we consider, to-day's, but yesterday's; hence I suppose the hole to be nearly finished, if not quite.' Here I should say, after taking these nests constantly for nearly thirty years, I find twenty-one days is the correct time from the commencement of the excavation to the end of laying seven eggs. I never had the luck to find eight; Mr. Gould, however, informs me he once did.

"Saturday, April 21.—Opened the hole, situated in the perpendicular bank, to keep off water-rats. Found, by measurement, the entrance was twelve inches from the surface of the ground, and about five feet from the water. The length of the ascending gallery was eight and a half inches, and the oval chamber six inches in diameter more. The top of the chamber was nine inches from the surface of the ground. It contained the usual nest of fish-bones, which was one and a half inches deep; and the same with the seven fresh eggs are now before me, with two other nests from the same locality. The bird flew off after the first dig, which I commonly make so as to cover up the hole again without disturbance if the full number of eggs has not been laid.

"There was no excrement in the chamber, but much just outside in the gallery. The size of the chamber is just sufficient for the owners to turn round pleasantly. When the young birds (which I have seen in every stage) have been some time in the nest, of course the hole gets very foul.

"Here, then, is a case capable of being attested by two or three witnesses step by step, and concerning which there can be no doubt, where the Kingfisher is proved to have made its own hole. I have known it, when driven from one bank by floods, to revert to an old hole of its own making in a previous year; but never has there been an instance of its taking up with the abode of its most deadly enemy, the water-rat. It is hard to prove a negative, but it is certainly a most unlikely thing for a Kingfisher to enter a rat-hole. No one who has seen the eggs of this species *in situ* as often as I have, can deny that the fish-bones are placed with the design of making a nest. "Geo. Dawson Rowley, 5, Peel Terrace, Brighton, Oct. 23."

In the *Field* newspaper for May 15th, 1869, the following interesting communication is made by some one writing under the *soubriquet* of "Hants":—

"I fancy that the opportunity of seeing a Kingfisher on its nest is so rare an occurence that you may think it worth reporting. One has built, if I may use the term, near my house, under circumstances so favourable to observation, that the only drawback to the indulgence of curiosity is the fear of scaring the birds and the risk of attracting marauders; and I only regret that the fact was not discovered sufficiently early to arrange a closer watch on their proceedings. Last autumn I had occasion to require some hundreds of cubic yards of soil for a river embankment, and these were obtained close to the stream by an excavation leaving a perpendicular side some 12 feet high. About seven weeks ago I noticed two holes about half-way up this side, freshly made, and evidently scooped out by birds, the action of the claws leaving a faint ridge on the floor of the burrow. Being occupied with other matters, it only struck me as very early for Sand-Martins, and I went my way. My schoolboys coming home, with keener interest in nests, saw, however, about a fortnight later, a Kingfisher fly out of the hollow, and applying to the principal burrow the test of the nose, indicated by McGillivray, found 'confirmation strong' in the 'ancient and fish-like smell.' The second burrow, a few feet distant, was evidently a beginning, frustrated by workmen, who have deterred the birds (whether the same pair or

not is uncertain) from proceeding, by removing earth which carried away part of it after it had reached some two feet of depth. In order to ascertain whether the bird was sitting in the occupied burrow, I turned the sunlight into it with a small looking-glass, which showed the whole interior, and the bird at the end facing us, with its brilliant colours gleaming vividly, and its eyes like two beads of flame. Unwilling to disturb it, I never continued this more than for a second or two, and never succeeded in finding the bird absent on several subsequent occasions. Last week, however, I found that she had shifted her position, sitting sideways on the enlarged end of the hole, and with the heads of two or three young ones peeping out from under her wings. They appeared not much to like the investigation, and nestled back into the farthest corner. An opera glass brought the group almost under microscopic observation. The mouth of the hole is 2½ inches wide, by 4 inches high, and the depth 2 feet 3 inches. A few small fish bones could be seen under the bird, but none in the passage. The circumstances already show that the birds have *not* appropriated the hole of a rat or any other creature, but have done all the work themselves. I subsequently found another nest in a bank overhanging the stream, and from this, which was a yard and a half deep, two eggs were taken with a small muslin net set on wire, some of the bone forming the nest being extracted with the eggs. The bird, which was driven off by the proceeding, did not, nevertheless, desert, and the same process of illumination showed her sitting on the remaining eggs. I have considerable doubt whether the hole is not always made by the bird itself, though, from the usual situation in the neighbourhood of rats holes, it is often easily mistaken for one."

No account of the Kingfisher would be complete without Mr. Gould's well-known anecdote, which is here subjoined :—

"On the 18th April, 1859, during one of my fishing excursions on the Thames, I saw a hole in a precipitous bank, which I felt assured was the nesting place of a Kingfisher; and on passing a spare top of my fly-rod to the extremity, a distance of nearly three feet, I brought out some freshly cast bones of a fish, convincing me that I was right in my surmise. The day following I again visited the spot with a spade, and after removing nearly two feet square of the turf, dug down to the nest without disturbing the passage which led to it. Here I found four eggs placed on the usual layer of fish bones. These I removed with care, and then replaced the earth, beating it down as hard as the bank itself, and restored the turfy sod. A fortnight after the bird was seen to leave the hole again, and my suspicion was awakened that she had taken to her old breeding quarters a second time. I again visited the place on the twenty first day from the date of my former exploration, and upon passing the top of my fly rod up the hole, found not only that it was of the former length, but that the female was within. I then took a large mass of cotton wool from my collecting box, and stuffed it to the extremity in order to preserve the eggs from damage during my again laying it open from above. On removing the sod and digging down as before I came to the cotton wool, and beneath it was formed nest of fish bones, the size of a small saucer, the walls of which were fully half an inch thick, together with eight beautiful translucent pale pinky-white eggs, and the old female herself. This nest I removed with the greatest care; and it is now deposited in the proper resting place for so interesting an object, the British Museum. This mass of bones, then weighing 700 grains, had been cast up and deposited by the bird and its mate in the short space of twenty one days. Ornithologists are divided in opinion, as to whether the fish bones are to be considered in the light of a nest. Some are disposed to believe them to be the castings and fæces of the young brood of the year, and that the same hole being frequented for a succession of years a great mass is at length formed; while others suppose that they are deposited by the parents as a platform for the eggs, constituting in fact a nest: and I think, from what I have adduced, we may fairly conclude this is the case ; in fact, nothing could be better adapted to defend the eggs from the damp earth."

Dr. Jerdon mentions that the *Alcedo bengalensis* is subject to variety, and occasionally

varieties of our Common Kingfisher are met with. Mr. F. Bond has a specimen beautifully varied with white, and M. Jules Verreaux informs us that he has lately seen two Kingfishers quite white with pink eyes, but on the breast was a faint tinge of rufous, and on the back a tinge of green. Mr. Bond likewise once shot a specimen which had the outer tail-feathers elongated in a curious manner.

We cannot now in England plead the excuse of the superstition of the peasantry in using the dried bird as a weather-cock (which practice still prevails in France as recorded above by M. Jules Verreaux), as the cause of the wholesale destruction which threatens this lovely bird. This usage evidently existed in this country in Shakespeare's time, and three instances are adduced by Mr. J. E. Harting in his interesting articles on the "Birds of Shakespeare" (Zool. 1867, p. 533):—"It was also supposed that the dead bird, carefully balanced and suspended by a single thread, would always turn its back towards that point of the compass from which the wind blew. Kent, in 'King Lear,' speaks of rogues who 'turn their *halcyon* beaks with every gale and vary of their masters;' and after Shakespeare, Marlowe, in his 'Jew of Malta,' says: 'But how now stands the wind? Into what corner peers my *halcyon's* bill?'"

The greatest enemy of the Kingfisher in England now appears to be the preserver of salmon-fry, and to the youthful fish the sharp-eyed Kingfisher proves a destructive foe, and the fishermen by putting snares across the hole catch the female birds in great numbers. Another way of catching Kingfishers is by placing thin meshed-nets across narrow brooks; this plan is extensively practised, Mr. J. H. Gurney informs me, near Darlington, and we also often get them thus caught on the brooks near Hendon, in the immediate neighbourhood of London. In confinement the Kingfisher is not an easy bird to keep, but in the Fish-house at the Zoological Gardens one or two may usually be seen, and their dexterity in capturing fish may often be noticed. Mr. A. D. Bartlett, the well-known Superintendent of the Zoological Gardens, tells us a curious story of a nest of young Kingfishers which were placed in the Aviary in the Fish-house in the above-named Gardens, and were duly nurtured and reared by another old bird, already domiciled there. The young ones were allowed to progress till they reached a decent size, when they were every one killed for some unaccountable reason by the old foster-parent, who speared them through with his bill.

As regards the occurrence of the Kingfisher in Ireland, Mr. Harry Blake-Knox, one of the best Field Naturalists we have in Great Britain, has written to us as follows :—

"Were I to write a history of this species I could only repeat the remarks of other Naturalists, and with regard to its migration in the County Dublin I can say but little but that it is not a common bird with us except in autumn. I have no doubt it would be a permanent resident in the county and generally throughout Ireland if unmolested, because it breeds in suitable localities and tarries with us frequently through the winter. It looks especially beautiful when seen in the latter season of the year, flying across the frozen rivers or crossing the snow. During the autumn there is a great influx of Kingfishers into this and the neighbouring counties, and it is solely at this season one meets with them upon the coast, and then only where it is rocky and consequently full of pools, in which rock fish and crustaceans (particularly prawns) are left by the receding tide, and these afford a plentiful supply of food for the Kingfishers. I am confident these birds, so found, are on their way south, but that they linger for months in such haunts I am positive, from the fact of always meeting a pair or more in the same locality. I have seen them on our islands, miles out to sea, where they have taken up a temporary abode, and I have elsewhere mentioned how strangely out of place they seem in such localities, and how they roost on the gunwales of boats in little companies, sitting side by side like Love-birds. They utter a shrill grating whistle more frequently over the salt water than over the fresh. The returning spring migration like that of the Skua is not performed along the east coast of Ireland, and perhaps like the Skua takes place on the western, but of this I have no proof."

Our descriptions and plate are from specimens shot in Berkshire by the late Mr. W. Briggs of Cookham.

ALCEDO BENGALENSIS.

ALCEDO BENGALENSIS.

(LITTLE INDIAN KINGFISHER.)

Alcedo bengalensis	Gm. Syst. Nat. I, p. 450 (1788).
Alcedo minor	Schl. Mus. Pays Bas, *Alced.* p. 7 (1863).
Alcedo ispida minor	Heugl. Orn. Nordost. Afr. p. 178 (1869).
Alcedo bengalensis var. sondaica	Reich. Handb. *Alced.* p. 3 (1851).
Alcedo sondaica	Cab. and Heine, Mus. Hein. th. II, p. 3 (1851).
Alcedo japonica	Bonap. Consp. Vol. Anis. p. 10 (1854).
Alcedo moluccensis	Wall. P.Z.S. 1863, p. 484 (*nec Blyth*).

A. torque pectorali nullâ: abdomine lætè castaneo: tectricibus alarum conspicuè cyaneo terminatis: regione paroticâ rufâ: minor: rostro longo: suprà lætè cyaneâ: capite cyaneo profusè fasciato.

Hab. in parte orientali Africæ septentrionalis, in Asiâ centrali et orientali, in totâ regione Indicâ et aliquando in sub-regione Austro-Malayanâ.

Male. Head crested, profusely banded with broad bars of very brilliant cobalt; scapularies and wing coverts greenish-blue, washed along the edge with intense cobalt; entire back very rich cobalt; quills brownish-black, the inner web very pale rufous at the base, the outer web, especially of the secondaries, edged with greenish-blue; tail indigo above, black beneath; a spot at the base of the bill, a longitudinal stripe from below the eye extending backwards over the ear, and the under surface of the body rich orange-rufous; throat and a patch of feathers along the sides of the neck white tinged with rufous; cheeks and a patch of feathers on the sides of the breast rich cobalt; bill black; feet orange.

Female. Similar to the male, but has the colours less vivid, and the base of the lower mandible orange.

Additional references.—*Alcedo bengalensis*, Bon et Vieill. Encl. Meth. I, p. 291 (1823); Kittl. Kupf. Vog. pl. 29 (1832); Sykes, P.Z.S. 1832, p. 84; Maclell. P.Z.S. 1839, p. 156; Jerd. Madr. Journ. 1840, p. 231; Vigne, P.Z.S. 1841, p. 6; Ewer, P.Z.S. 1842, p. 92; Gray, Cat. Mamm. and B. of Nep. p. 57 (1846); id. Gen. of B. I, p. 81 (1847); id. Cat. Fiss. Brit. Mus. p. 68 (1848); Blyth, Cat. Birds Mus. As. Soc. Beng. p. 49 (1849); Temm. and Schl. Faun. Jap. Av. pl. 38 (1850); Bonap. Consp. Gen. Av. I, p. 158 (1850); Cass. Cat. Hale. Phil. Mus. p. 1 (1852); Hartl. Journ. f. Orn. 1854, p. 155; Moore, P.Z.S. 1854, p. 269; Horsf. and Moore, Cat. Birds Mus. E.I. Co. I, p. 129 (1854); Adams, P.Z.S. 1858, p. 474; Gould, P.Z.S. 1859, pp. 150, 151; Adams, P.Z.S. 1859, p. 169; Cab. and Heine, Mus. Hein. th. II, p. 144 (1860); Mason, Burm. p. 674 (1860); Schrenk, Amurl. p. 265 (1860); Swinh. Ibis, 1860, p. 49 et 1861, pp. 31, 328; Irby, Ibis, 1861, p. 228; Jerd. B. of Ind. I. p. 231 (1862); Blakist. Ibis, 1862, p. 325; Swinh. Zool. 1863, p. 8747 et P.Z.S. 1863, pp. 269, 333, et Ibis, 1863, p. 260; Wall. P.Z.S. 1863, p. 484; Day, Land of Perm. p. 460 (1863); Schomb. Ibis, 1864, p. 247; Martens, Journ. f. Orn. 1866, p. 18; Pelz. Voy. Nov. Vog. p. 50 (1865); Beav. P.Z.S. 1865, p. 692 et Ibis, 1865, p. 409; Blyth, Ibis, 1866, p. 348; Whitely, Ibis, 1867, p. 196; Swinh. Ibis, 1867, p. 408; Tytler, Ibis, 1868, p. 196; Beav. Ibis, 1869, p. 409. *Alcedo minor*, Schl. Vog. Ned. Ind. *Alced.* pp. 4, 43, pl. 1 (1864). *Alcedo ispida, var bengalensis*, Radde, Reise Ost. Lib. II, p. 143 (1863).

Young. Similar to the adults, but the bill short, and the breast feathers distinctly edged with greenish blue, very conspicuous in some lights.

Hab. Cairo (*Lord*), Scanderoon ((*S. Stafford Allen, spec. in mus. R.B.S.*), Suez (*Heuglin*), Nubia (*mus. Lugd.*), Sinatic Peninsula, Wady Fieran and Wady Gharandel (*Lord*), Caucasus, Persia, Altai Mountains (*Schrenk*), Central Asia (*mus. R.B.S.*), India generally and Ceylon (*Jerdon*), Burmah (*Blyth*), Penang (*Cantor*), Malacca (*Wallace*), Java (*mus. Lugd.*), Flores (*Wallace*), Timor (*mus. Lugd.*), Labuan (*Motley*), Philippine Islands (*Cuming*), Gilolo (*Wallace*), Siam (*Schomburgk*), China generally (*Swinhoe*), Formosa (*Swinhoe*), Hainan (*Swinhoe*), Japan (*Temminck and Schlegel*), Eastern Siberia (*Radde*), Amoor Land (*Schrenk*).

However nearly allied the Little Indian Kingfisher may be to our Common Kingfisher of Europe, there can be no doubt that it is specifically distinct, and is easily distinguishable by its smaller size, longer bill, and the more intense blue colouring of the adult birds. In habits also it seems to differ slightly from *Alceda ispida*, for, whereas this last-named bird is as partial to stagnant ponds and brooks as to running streams, its Indian congener appears to prefer the latter and is seldom found in the vicinity of stagnant water.

The most painstaking researches into the history of the present species that I have been able to find are those published by Dr. L. von Schrenk in his celebrated work on the Zoology of Amoor Land, but he has unfortunately wasted his energy in endeavouring to prove the inutility of separating *A. bengalensis* from *A. ispida*, all the while admitting the distinctions of general size and length of bill, which are sufficient to separate it as a species. We may, however, be doing an injustice to Dr. von Schrenk, if we do not give the substance of his argument in his own words. We therefore transcribe from his work the following remarks which bear upon the point in question:—

"There is no doubt that the form of *Alcedo ispida*, which since Gmelin's time has by many authors been considered to be a distinct species under the name of *Alcedo bengalensis*, to which also the Japanese form belongs, is only a variety of *A. ispida*. Our Amoor specimens of Kingfishers, which exactly agree with the Japanese form, and which we have compared with specimens of *A. ispida* from the Altai, Caucasus, Persia and Western Europe, comfirm us in this opinion. * * * Even those Ornithologists who separate *A. bengalensis* from *A. ispida*, agree that in colour and marking there is no difference between them. * * * Our Amoor specimens agree so closely in intensity and distribution of colour with specimens from Western Europe, Caucasus, and Persia, that we can observe not even a climatic difference. The old males from the Amoor are distinguished by an equally intense blue and green on the upper parts, and not less intense rust-red on the under parts than in birds from the above-mentioned localities. Compared with both an adult specimen from the Altai Mountains seems however much paler, particularly as regards the rust-red of the under parts. In the young birds of the Amoor, as in the European species, the blue-green of the upper parts is less handsome and the rust-red on the breast dashed with a greenish-grey tinge. A similar specimen we have in our museum from Japan, received from Temminck, and it agrees with the young specimen from the Amoor. In the freshly-killed young from the Amoor the beak is blackish with a whitish tip, iris brown, feet yellowish-brown. There is, however, a difference in the size of our bird. Much as all observers testify to its similarity of colours and markings to *A. ispida*, they equally agree as to its smaller size and proportionately longer bill. It is indeed only in this respect that it differs, and it is on these characters alone that *A. bengalensis* is founded."

Dr. von Schrenk then gives a table of measurements to shew the gradual variation of a series of specimens of *A. bengalensis* towards *A. ispida*, and even by this table it is evident that the bill of the latter species, when fully adult, does not equal in length that of the young *A. bengalensis*, and he contends that all the arguments brought forward serve to

prove that *A. bengalensis* is only a small variety of *A. ispida*. He then proceeds: —

" Kittlitz states particularly that *A. bengalensis*, as observed by him at Luzon, agreed precisely in habits with *A. ispida*. Nor could we observe any difference in those we observed in Amoor Land, either in note, flight, or choice of abode from *A. ispida*. * * * Having identified *A. ispida* with *A. bengalensis*, and having found the latter on the Amoor, we largely increase its geographical range. Instead of the former boundary to the east we can follow it down to the eastern end of the old World, and southwards through India and China to the Philippine and the Japanese Islands, northwards through Siberia and the Amoor to the Sea of Ochotsk. In Siberia it was observed by Gmelin and Messerschmidt only on the Torn, by Pallas on the Jenessei, but not further east. As we saw many on the Upper and Lower Amoor, it is probable that it extends from Jenessei to the Trans-Baikal region.

" In the Amoor Country the extended willow thickets bordering the stream along its various branches, and on the islands, offer the best localities for breeding and procuring food. As in these wilds the noise of the oars does not directly frighten it away, it is often easily surprised by the boat. Particularly in the wet rainy summer of 1856, when the river Amoor was very high, and when great numbers of the willows hung over the water or had their roots submerged, I observed the Kingfisher plentifully from June to September, from the village of Yrri, on the lower Amoor, to Albasin on the upper part of the stream. * * * In fact, we observed it all over the Amoor to its mouth."

Herr Radde supplies some additional notes, as follows :—

" Herr L. von Schrenk has already treated very fully of the Siberian bird, and shewn its identity with the Bengalese variety of *A. ispida*. It only remains for me, therefore, to say something of my own specimens. I must state that in the Trans-Baikal region, as also on Lake Baikal, the Kingfisher is not rare, and thus confirms von Shrenk's supposition that it would be found to inhabit the country between Jenessei and Amoor Land. I observed it pretty often on the Central Onon, particularly at the fork of the river where the stream flows slowly. Here it was living at the end of September, notwithstanding that during the night ice was formed an inch thick on the water. A female was also killed on the 17th of May, 1858, on the Bureja Mountains."

I give Dr. von Schrenk every credit for the pains he has taken, but I venture to suggest that the specimens measured by him from Persia, &c., were indeed *A. bengalensis* and not true *A. ispida*. It is true I have never seen specimens from the *exact* localities, but I have seen a Central Asiatic specimen from the vicinity of Bokhara, and it was undoubtedly true *A. bengalensis*. It seems probable that the only specimen of true *A. ispida* examined by the worthy doctor was the German specimen of which he adduces the detailed measurements, and which at once give him the characters of a larger size but smaller beak. I must further remind Dr. von Schrenk that Kingfishers, especially those of the genus *Alcedo*, are a considerable time in gaining their adult size and plumage, and that it is therefore, hardly fair to compare young birds of one species with old birds of another in the same tabular diagram.

Professor Reichenbach has separated *Alcedo bengalensis* into two races, which he calls respectively *A. indica*, from the continent of India and the Tenasserim provinces, and *A. sondaica*, from Java, Sumatra, Borneo, Malacca, and Ceylon. These races are supposed to present differences in size, but scarcely any evidence to this effect is brought forward. I may state that in preparing the present article I have carefully examined more than one hundred specimens of the present species, with the following result. Taking the Indian bird as the normal form, I do not find any positive distinction between it and the Chinese or Japanese bird (*A. japonica*, Bp.), although the latter does appear to be somewhat more green in tint than those from the continent of Asia. I have, however, not examined a sufficiently large series to be quite sure on this point, while Dr. von Schrenk plainly states that there is no difference. I cannot, moreover, find that the bird from the Indo-Malayan sub-region is

really distinct in any way from the Indian species, specimens from Timor and Flores excepted (*vide infrà*). Ceylonese specimens, however, certainly do vary in being smaller and in having the blue of the upper surface more vivid. Lord Walden has very kindly lent me several specimens for examination, and in noting this variation Professor Reichenbach was no doubt right, but I cannot allow that it is a case for specific distinction, as a single Ceylonese specimen placed in the midst of a series from Bengal would not be detected; it is only on comparing a series of one bird with a series of the other that a variation can be perceived. The single specimen in my collection from Central Asia differs from the Indian in being of a more vivid greenish blue and much paler red underneath. This difference is also noted by von Schrenk in a specimen from the Altai and is a curious fact as I cannot detect any real difference in the more western specimens from the usual Indian form. There can, I think, be little doubt that the bird from Flores and Timor constitutes another local variety, as was noticed long ago by Temminck and Schlegel (Fauna. Jap. Aves. p. 77). The plumage is altogether much richer and the blues of the upper surface more intense. Mr. Wallace brought home several specimens from the former locality and has identified them with *A. moluccensis* (P.Z.S. 1863, p. 484). The latter, however, is a distinct species, having the ear-coverts blue. There is also a slight difference worth noting in the specimens of *Alcedo bengalensis* from Formosa as compared with those from the mainland of China, consisting in the greater development of the blue patches of feathers on either side of the breast. In addition also to their larger size, they appear to be brighter in tint and more inclining to berylline-green. The large series brought home by Mr. Swinhoe during his second visit to Formosa exhibits this character in all the fully adult examples, and he has very kindly given me some notes on the specimens in his collection which will be given below.

I now append a table of measurements taken from adult specimens from various localities. In juxta-position are placed a few *Alcedo ispida* to show that the character of the larger size and proportionably shorter bill are constant characters in the latter species:—

No.	Sex.	Name.	Locality.	Authority.	Long tot.	Rostr.	Al.
1	♂	A. ispida.	England.	mus. R. B. S.	7·2	1·7	3·0
2	♂	,,	,,	,,	7·2	1·7	2·95
3	♂	,,	,,	,,	7·1	1·6	2·95
4	♂	,,	,,	,,	6·9	1·6	2·95
5	♂	,,	,,	,,	7·5	1·7	3·0
6	♀	,,	,,	,,	7·2	1·7	3·0
7	♂	,,	,,	,,	6·8	1·6	3·0
8	♀	,,	,,	,,	7.3	1·6	3·0
9	♂	,,	,,	,,	7 5	1·65	3·0
10	♂	,,	Greece.	H. B. Tristram.	7·0	1·5	3·1
11	♂	,,	Jericho.	,,	6·7	1·5	2·95
12	♂	A. bengalensis.	Central Asia.	mus. R. B. S.	6·5	1·7	2·9
13	♂	,,	Cairo.	J. K. Lord.	6 6	2·0	2·8
14	♀	,,	Ceylon.	mus. Walden.	6·3	1·65	2·6
15	♂	,,	,,	,, ,,	6·4	1·75	2·7
16		,,	,,	,, ,,	6·4	1·65	2·8
17		,,	Bengal.	mus. R. B. S.	6·2	1·65	2·8
18		,,	India.	,,	6·1	1·65	2·8
19		,,	,,	,,	6·1	1·75	2·7
20	♂	,,	Java.	mus. R. Swinhoe.	6·0	1·65	2·85
21		,,	Malacca.	Wallace.	5·8	1·65	2·8
22		,,	Japan.	Whitely.	6·4	1·65	2·8
23		,,	Labuan.	Dillwyn.	6·4	1·65	2·7
24		,,	Gilolo.	Wallace.	6·5	1·65	2·8
25		,,	Hainan.	Swinhoe.			
26		,,	Amoy.	,,	6·2	1·65	2·8
27		,,	Formosa.	,,	6·1	1·65	2·85
28	♂	,,	,,	,,	6·2	1·65	2·8
29		,,	Phillipines.	Cuming.	6·0	1·6	2·9

Dr. Jerdon, in the "Birds of India," says:—

"This Indian Kingfisher, so nearly allied to the common European one, is spread throughout the whole of India, Ceylon, the Indo-Chinese region, Malayana, and even China. It is quite a diminutive of the European bird, and frequents rivers, brooks, tanks, irrigated paddy-fields, and ditches by the road-side, perching on a tree or post, a stone, or a telegraph wire. It dives obliquely on its prey, which consists of small fish, tadpoles, and aquatic insects. It breeds in deep holes in banks of rivers; Buchanan Hamilton states also in mud-walls, and that it lays six or seven pinkish-white round eggs. Layard remarks that many are taken in Ceylon, by a net placed under water, for sale in China. I have seen specimens in which there was a good deal of white on the head, back of neck, and back."

I am indebted to many kind friends for original notes on this bird in India, and amongst them Mr. G. F. L. Marshall has favoured me with the following:—

"I have obtained *Alcedo bengalensis* in the Umballah district, the Ganges Dooab, Dehra Doon, and the valley of the Jumna in the Himalayas; it is pretty common in all these localities, but is confined to running water. I have never seen it near any still water-tanks or jheels, nor perched in trees. It frequents the river-beds of the Doon and sub-Himalayan valleys; as far as the boulder formation extends, and the water is clear and rapid, it may be seen perching on the stones or projecting rocks, and watching intently for its prey in the eddies and shallows; lower down, where the slope of the country diminishes, and the stony bed gives place to soft mud and drifting sand, and the clear blue rapids to broad expanses of dark-coloured water heavily charged with silt, and wandering sluggishly between interminably-shifting sand-banks, the little Kingfisher, unable to obtain an adequate supply of food, betakes itself to the large canals which traverse the district—here the falls of masonry, by creating barriers, form points of concentration for the fish, which may be seen in shoals of all sizes, vainly endeavouring to force their way to the foot of the weir. Thus they fall an easy prey to the watchful little bird, which takes up its position on the projecting masonry pier. A pair of these birds live in this manner at each of the falls, and I had ample opportunity of observing them. They are very fearless and tame, and while engaged in fishing will permit themselves to be approached within eight or ten feet, and I have sat for some minutes within that distance of one without attracting any more attention than an occasional rapid glance of the eye in my direction. They never hover, but dart from their perch, returning immediately. The natives call it the "Gărūr," from some fancied resemblance to Vishnu's fabulous serpent-eating bird, mentioned in the "Prem Sagur;" but I fancy that a closer study of their own mythology would induce them to alter the name: it is worth remarking that they never confound this species with *Halcyon smyrnensis*, the other common blue Kingfisher of those parts, which they call the "Gŭnpŭk," for they are essentially unobservant of nature and have but one name for *Yungipicus hardwickii*, *Brachypternus aurantius*, and *Upupa epops*."

"My brother, Captain C. Marshall, has also obtained this bird from Cashmere, and the rivers below Murree in the Pŭnjāb."

My friend, the late Captain R. C. Beavan, gave me the following note:—

"This species, which is the representative of the common English Kingfisher in India, is abundant about the neighbourhood of Calcutta, at Barrackpore—where the rice swamps afford plenty of small fish, shrimps, etc., for its food. It is much rarer about the Maunbhoom district, and decidedly rare at Umballah, where I only procured one specimen, in November, 1866."

"In solitary places," writes Sir Emerson Tennent, in his well-known work on Ceylon, "where no sound breaks the silence except the gurgle of the river as it sweeps round the rocks, the lonely Kingfisher sits upon an overhanging branch, his turquoise plumage hardly less intense in its lustre than the deep blue of the sky above him, and so intent is his watch upon the passing fish that intrusion fails to scare him from his post—the emblem of vigilance and patience."

Dr. Leith Adams relates that he found the present species "inhabiting India and the lower Himalayan ranges. Very plentiful on the streams and lakes of Cashmere, and adding much to the beauty of the far-famed Shalimar gardens and the delightful scenes in that romantic land." The same author also subsequently observes that it is a "common tenant on all the streams and lakes in the Valley of Cashmere."

Captain Irby, in his paper on the "Birds of Oudh and Kumaon," says that *Alcedo bengalensis* was not seen nearly so often as *Ceryle rudis* or *Halcyon smyrnensis*, and, unlike the latter, preferred running streams.

For the following observations I am indebted to the kindness of Mr. Swinhoe:—

"In answer to your inquiries respecting the distribution of our 'King of the Shrimps' (*Alcedo bengalensis*), I can only give you a few notes. It is a common bird in the cultivated parts of the country from Canton to Shanghai, living in the neighbourhood of rice-fields. I have met with it in every part of China, from Hainan to Peking, and westwards as far as Changking in Szechuen, and I have a large series of specimens from Amoy and a few from Canton, Hongkong, and Tingchow, one from Foochow and one from Hankow. They vary a little in size, length of wing and beak; and as a rule their coloration is uniform, and very similar to that of skins in my collection from India. Formosan specimens, however, I notice after a close examination of a large series, have peculiarities of their own. They are somewhat larger and longer-winged than the continental examples, and have the azure latero-pectoral patch larger and extending downwards a short way along and under the edge of the wings. Males and females both have it, but it is duskier in the latter. None of my continental series quite equals the finest Formosans in length of wing, though one skin from Amoy, two from Canton, and one from Tingchow, have the fully-extended blue side-patch, and there are several that have it more or less developed.

"Only one Formosan bird, and that a male from Tamsuy, has the patch small, but in dimensions it agrees with the largest of the other islanders. The following measurements of the wing of a few specimens show the comparative length in birds from different localities: — ♂, Formosa, wing 2·85 inches; ♀, 3·0 — ♂, Canton, 2·75; ♀, 2·80 — ♀, Hongkong, 2·75 — ♂, Amoy, 2·75 — ♂, Tingchow, 2·88; ♀, 2·85. Females are duller coloured, and have the lower mandible red for half of its length and more; this character being apparent in the nestling. The fledgling has the breast washed with greyish black; auxiliaries and under parts pale rust colour, deeper on flanks, tibiæ and vent. Upper parts dull blackish grey, tinged with green; head and back of the neck spotted with dull greenish blue, the wing-coverts faintly so; the blue of the lower back and rump also tinged with green, brightening on the upper tail-coverts; tail as in the adult; throat and under size of the neck buffy white; legs deep purplish brown, reddish on the soles and under surface. The young female is not so bright as the young male, especially about the rump and upper tail-coverts. The Formosan variety shows no special difference in the young stage."

"From the "Hainan Gazateer" (*Kiung-shan-Heen che*):—

"Fri-tsuy (*Kingfisher*).—There are several large and small kinds. The skins of the large kinds (*Halcyon smyrnensis* and *H. pileatus*) are paid as tribute to the Emperor. The small kind is called the water 'Tsuy.' There are also the hill 'Tsuy' (*Pelargopsis sp.*) and the red 'Tsuy' (*H. coromandeliana*)."

Captain Blakiston procured specimens in Northern Japan, and remarks:—

"No distinction can be made out between this specimen and others collected in China; but there seems considerable variation in the colour of the bill of this species. It is the only Kingfisher I observed in Jesso, and appears quite to represent that of England in Northern Japan."

Near Hakodadi, however, it is not so common, according to Mr. Whitely, who writes:—

"One specimen (a female) only, obtained at Hakodadi, Sept. 24, 1865, from a native bird-fancier, from whom I learned that it had been caught up a creek near the village of Kamida, a few miles from the town. It is most probably a scarce bird, as this is the only

instance in which I know of its capture. Length, 6·12in.; wing, 2·87in. Bill, black; eye, black; legs and feet, indian red."

Sir Robert Schomburgk found the present species in Siam, and has published the accompanying note:—

"This is a very pretty species of its kind; it is small—no more than 6 inches in length. When on the wing, the brilliancy of its plumage is easily discerned; less so when sitting. It selects generally the dry branch of a tree close to the river's edge, and there it watches its opportunity to dart into the water after the finny tribe, which, from its watch-tower, it has observed near the surface of the river."

Lastly, Mr. John Keast Lord, to whom belongs the honour of first introducing *Alcedo bengalensis* as an Egyptian bird to the ornithological world, has very kindly given me the following extracts from his note-book on the species, as observed by him in Egypt and on the Sinaitic peninsula:—

"I first noticed this handsome little Kingfisher quite close to Cairo in February, 1868. I shot a male specimen at Shoobra, which is at this time in my possession. The habit of *A. bengalensis*, so far as I have been able to observe it, is to frequent running streams in preference to still water. I have frequently seen the Kingfisher, whilst flying or steadily hovering close to the surface of the stream, make a sudden plunge after a fish, and on coming up with the prize perch upon any available branch, stone, or log, to swallow it; and although it oftentimes sits in the same manner as *A. ispida*, upon a branch overhanging the stream, waiting patiently for an opportunity to plunge after food, my own impression is that *A. bengalensis* more often makes the dash into the water whilst on the wing than from a branch or other fishing station. The only place I observed it fishing in what may be called still water was in the canal close to the Cairo railway terminus, and I may truthfully say I have watched this Kingfisher actually fishing in the very midst of the busy traffic of Cairo, and within a gunshot of the station from which all the trains running between Cairo and Alexandria start or arrive as the case may be. Nevertheless, its favourite locality is the swiftly-flowing stream near Shoobra."

"In June, 1869, I for the second time noticed this Kingfisher at Shoobra, and hence I think it may be fairly inferred that it breeds in Egypt. Twice I saw *A. bengalensis* on the peninsula of Sinai and in Wâdy Hebra in June, and again at Tor in the same month; from the latter place I have a specimen. At both these places, I may remark, there are running streams and small fish in them."

"*A. ispida* also occurs on the peninsula of Sinai as well as in Egypt. I have no positive proof to offer, nevertheless I am pretty confident that *A. bengalensis*, and probably *A. ispida*, both breed at Tor and in Wâdy Hebra."

In the Leiden Museum there is a specimen from Nubia, collected by Ruppell, with a very long beak, equalling in this respect Mr. Lord's Cairo specimen.

The figures and descriptions are from Bengal specimens in my collection.

ALCEDO GRANDIS.

ALCEDO GRANDIS.

(GREAT INDIAN KINGFISHER).

Alcedo grandis . . . . . Blyth, Journ. As. Soc. Beng. XIV, p. 190 (1845); id. Cat. Birds Mus. As. Soc. Beng. p. 49 (1849); id. Ibis, 1865, pp. 30, 31, et 1866, pp. 348, 363; Gray, Hand-list of B. p. 196 (1869).

Alcedo euryzona . . . . . Jerdon, Birds of India, I, p. 231 (1862, *nec Temm.*).

A. torque pectorali nullâ: abdomine castaneo: tectricibus alarum conspicuè cyaneo apicatis: regione parotică nigrâ cyaneo notatâ: major: viridis: capite sparsim fasciis viridi-cyaneis transfasciato: scapularibus viridibus.

Hab. in plagâ Himalayanâ orientali.

Head crested, black, with transverse bars of pale greenish cobalt, each bar having a little streak of silvery white down the centre; scapularies blackish washed with deep green; whole of the back rich silvery cobalt, deepest on the rump and upper tail-coverts; wing-coverts blackish washed with dark green, each feather having a small spot of silvery blue; quills blackish, the inner web pale rufous at the base, the outer web of the secondaries edged with dark greenish-blue; tail dark indigo above, black beneath; cheeks and ear-coverts blackish longitudinally streaked with silvery-cobalt; a very small loral spot, a longitudinal stripe along the sides of the neck, and the throat, white tinged with yellow; rest of the under-surface of the body dark rufous; bill black; feet orange. Total length 8 inches, of bill from front 1.7, from gape 2.2, wing 3.85, tail 1.65, tarsus 0.35, middle toe 0.65, hind toe 0.3.

Hab. Terai Darjeeling *(Anderson)*.

This truly magnificent species has as yet only been met with in the neighbourhood of Darjeeling. It was first described by Mr. Blyth in 1845, and the type specimen is still in the Calcutta Museum. Mr. Jerdon has certainly made a mistake in considering it to be the young of *A. euryzona*, which was, moreover, described as a distinct species by Mr. Blyth under the name of *A. nigricans*. It was hardly possible, therefore, that so acute an observer would have separated *A. grandis* and not have united it to *A. nigricans*, if they had both been the young of *A. euryzona*. Mr. Blyth has, however, himself written (*l.c.*) in defence of the species, and I can only state my full concurrence in his views.

The type specimen came from Darjeeling, and the specimen from which the figure and description are now taken was also shot in the Darjeeling Terai by a shikaree in the employ of Dr. John Anderson, the well-known Curator of the Culcutta Museum. I beg to tender this gentleman my most hearty thanks for his great kindness in allowing this extremely valuable specimen (the only perfect one known, as the type is in bad condition) to be sent to England for the enhancement of my work.

ALCEDO MOLUCCENSIS.

ALCEDO MOLUCCENSIS.

(MOLUCCA KINGFISHER.)

Alcedo moluccensis	Blyth, Journ. As. Soc. Beng. XV., p. 11 (1846).
Alcedo minor moluccensis	Schl. Mus. Pays Bas, *Alced.* p. 8 (1863); et Vog. Ned. Ind. *Alced.* pp. 5, 44, pl. 1 (1864).
Alcedo ispida, var	Lesson, Voy. Coq. I, p. 695 (1826).

A. torque pectorali nullâ: abdomine rufo: tectricibus alarum conspicue cyaneo apicatis: regione parotică nigrâ cyaneo notatâ: minor: lætissimè cyaneo: scapularibus cyaneis.

Hab. in subregione Austro-Malayanâ.

Male. Head crested, black, profusely barred with rich cobalt; cheeks and ear-coverts black longitudinally streaked with rich cobalt; back very deep cobalt; scapularies and wing-coverts dark greenish cobalt; the latter having a spot of brighter cobalt on the apex of each feather; primary coverts blackish washed externally with greenish blue; quills brownish black, the inner web very pale rufous at the base, the external web, especially of the secondaries broadly washed with deep blue; a spot in front of the eye pale reddish; throat and a patch of feathers along the sides of the neck, white fringed with pale rufous; rest of the under-surface of the body ochreous-chesnut, the upper part of the sides of the breast having a conspicuous bright blue patch of feathers; bill black; feet vermilion.

Female. Precisely similar to the male, but perhaps of not quite such an intense blue, and always to be distinguished by the orange mark at the base of the under mandible.

Hab. Flores (*Wallace*), Celebes (*Wallace*, *Fraser*), Bouru (*Wallace*), Gilolo (*Wallace*), Batchian (*Rosenberg*), Mysol (*Rosenberg*), Salawati (*Rosenberg*), Ceram (*Rosenberg*), Amboina (*Rosenberg*), New Ireland (*G. R. Gray*).

The present species belongs to the same section of the genus *Alcedo* as *A. grandis*, having like this bird the ear-coverts blue. This peculiarity at once distinguishes it from *Alcedo bengalensis* which is its nearest ally, and of which it seems to be the representative species in the Moluccas.

Additional references.—*Alcedo moluccensis*, Blyth, Cat. Birds Mus. As. Soc. Beng. p. 49 (1849); Reich. Handb. *Alced.* I, p. 5 (1851); Rosenb. Journ. f. Orn. 1864, p. 118; Gray, Hand-list of B. I. p. 95 (1869).

No.	Sex.	Locality.	Authority.	Long tot.	Rostr.	Al.
1	♀	Bouru.	Wallace.	6·3	1·5	2·85
2	♀	Celebes.	Fraser.	6·5	1·5	2·85
3	♀	,,	,,	6·5	1·5	2·9
4	♂	Gilolo.	mus. R. B. S.	5·7	1·5	2·85
5	♂	Amboina.	Rosenberg.	5·7	1·5	2·8

Mr. George Robert Gray gives New Ireland as a habitat of the present bird. It very probably occurs, but I have never read of its being met with there, neither does the British Museum possess a specimen from the locality.

Mr. Wallace has kindly forwarded me the following note

"*Alcedo moluccensis* has the bill black, with a red patch at the base of the lower mandible; feet red; iris dark. It frequents banks of streams and eats small fish."

The descriptions and measurements, as well as the figures in the accompanying plate, are taken from an adult pair of birds. The male is from Celebes, sent to me by Mr. W. T. Fraser, the female from Bouru, collected by Mr. Wallace.

ALCEDO ASIATICA.

ALCEDO ASIATICA.

(MALAYAN KINGFISHER.)

Alcedo asiatica, ...	Swains. Zool. Illustr. 1st ser. I, pl. 50 (1821).
Alcedo meningting, ...	Horsf. Trans. Linn. Soc. XIII, p. 172 (1822).
Ceyx meningting, ...	Cuv. Regne. Anim. I, p. 444 (1829).
Alcedo bengalensis, ...	Less. Traitè d'Orn. p. 243 (1831, *nec Gm.*).
Alcedo Verreauxii, ...	De la Berge, Rev. Zool. 1851, p. 305, pl. 9.

Meningting of the Javanese (*Horsfield*).
Binti, of the Natives of Sumatra (*Raffles*).

A. torque pectorali nullâ: abdomine intensè rufo: minor: rostro breviori: pileo lætè cyaneo fasciato.

Hab. in regione Indo-Malayanâ.

Male. Head and cheeks dark blue, banded with bright cobalt; a longitudinal patch of feathers along the sides of the neck, white tinged with rufous; back beautiful bright cobalt; scapulars black washed with blue; wing-coverts black, washed and spotted with bright blue; quills black, the inner web very light rufous at the base, the outer web washed with blue, more especially on the secondaries; tail blueish-black; throat whitish; a spot in front of the eye rufous edged with black; under surface of the body with the under wing- and tail-coverts bright rufous, extending up the neck in very old birds; bill black; feet red.

Female. Similar to the male, but the colours not so bright, the cheeks and ear-coverts rufous instead of blue, and the lower mandible orange.

Young Male. Similar to the old female, but shewing a few blue feathers on the red cheeks.

Hab. Maunbhoom (*Beavan*), Cochin China (*mus. R. B. S.*), Tenasserim (*mus. Ind.*), Andaman Islands (*Tytler*), Penang (*Cantor*), Malacca (*Wallace*), Singapore (*mus. Brit.*), Sumatra (*Raffles*), Java (*Horsfield*), Bangka (*mus. Lugd.*), Lombock (*Wallace*), Celebes, Macassar (*Wallace*), Gorontalo (*von Rosenberg*), Borneo (*mus. R. B. Sharpe*), Labuan (*Motley*).

Additional references.—*Alcedo asiatica*, Sharpe, Ibis, 1869, p. 281; Gray, Handl. of B. App. p. 402 (1869). *Alcedo meninting*, Temm. Pl. Col. 239, fig. 2 (1823); Raffl. Mem. p. 655 (1830); Gray, Gen. of B. I, p. 81 (1846); Kaup, Fam. *Alced.* p. 16 (1848); Gray, Cat. Fiss. Brit. Mus. p. 63 (1848); Blyth, Cat. B. Mus. As. Soc. Beng. p. 49 (1849); Bonap. Consp. Gen. Av. I, p. 158 (1850); Reich. Handb. *Alced.* p. 4, t. cccxciv, fig. 3050-51 (1851); Cass. Cat. Halc. Phil. Mus. p. 3 (1852); Bonap. Consp. Vol. Anis. p. 10 (1854); Horsf. & Moore, Cat. B. Mus. E. I. Co. I. p. 130 (1854); Moore, P.Z.S. 1854, p. 269; Cab. & Heine, Mus. Hein. th. II, p. 144 (1860); Mason, Burm. p. 671 (1861); Wall. P.Z.S. 1863, p. 484; Schl. Mus. Pays Bas, *Alced.* p. 7 (1863) et Vog. Ned Ind. *Alced.* pp. 6, 44, pl. 3 (1864); Pelz. Voy. Nov. Vog. p. 50 (1865); Beav. Ibis, 1867, p. 319; Gray, Handl. of B. p. 95 (1869). *Alcedo Verreauxii*, Reich. Handb. *Alced.* p. 5. t. ccccliii, fig. 3173 (1851); Blyth, Ibis, 1866, p. 348.

There can be no question that the name of *Alcedo asiatica* of Swainson is the proper one to be employed for the present bird, and I am glad to see that Mr. Gray in his "Hand-list" concurs in this rectification which was first proposed by me (*l.c.*). When at Cambridge I looked over the Kingfishers in the Swainson collection and there discovered the type of his *Alcedo asiatica*, which is said to be from Java, collected by Dr. Horsfield, and is doubtless one out of the series from which the latter described his *A. meninting*. Ornithologists have invariably accorded precedence to the latter name, but by reference to the dates given above it will be seen that Swainson's name has priority.

The *Alcedo Verreauxi* of M. de la Berge is nothing more than the female of the present species. The rufous cheeks and orange lower mandible, which are supposed by the describer to be specific distinctions, are simply the characteristics of the female *Alcedo asiatica*. I have examined several carefully sexed specimens brought home by Mr. Wallace, as well as several others in the Leiden Museum collected by von Rosenberg, and have ascertained this fact to a certainty. The young males at first resemble the old females, but gradually assume the blue on the cheeks and ear-coverts and get the bill black. M. de la Berge also lays stress on the smaller size of the Bornean bird in favour of its specific separation. I have examined a great many specimens from different parts of Borneo, and find that they run generally a little smaller than those from Celebes or Java, but I know no Kingfisher that varies more in general size than the present species, and I have seen many specimens from Java fully as small as any from Borneo, so that no reliance can be placed on this as a specific character. Excepting a slight difference in size specimens from all countries are very similar, with the exception of those from Eastern India and Cochin China, which present some difference in coloration, being of a brighter blue above and deeper red underneath than specimens from other localities. The inclusion of the bird in the 'Indian' Avi-fauna henceforth rests upon the authority of a bird in Lord Walden's collection collected by the late Captain Beavan and bearing the label "Maunbhoom February, 1865." Captain Beavan identified this specimen as *Alcedo bengalensis*, but it is clearly not that species as it has *red on the cheeks*, a sure sign of *A. asiatica*.

I subjoin the comparative measurements of a series of specimens.

No.	Sex.	Name.	Locality.	Authority.	Long tot.	Rostr.	Al.
1.	♂	A. asiatica.	Lombock.	Wallace.	6·0	1·4	2·5
2.	♂	,,	Malacca.	Wallace.	5·5	1·45	2·5
3.	♂	,,	Malacca.	Wallace.	5·5	1·5	2·6
4.	♀	,,	Macassar.	Wallace.	6·3	1·4	2·5
5.		,,	West Java.	Wallace.	5·6	1·4	2'5
6.		,,	Java.	Horsfield.	5·9	1·5	2·6
7.		,,	Java.	Horsfield.	5·7	1·2	2·5
8.	♀	,,	Java.	Mus. Lugd.	6·0	1·7	2·8
9.		,,	Borneo.	Mus. R.B.S.	5·3	1·4	2·45
10.	♂	,,	Borneo.	Mus. Lugd.	5.2	1·6	2·5
11.		,,	Labuan.	Motley.	6·0	1·5	2·4
12.	♂	,,	Cochin-China.	Mus. R.B.S.	6·0	1·8	2·8

But little has been recorded of the habits of the Malayan Kingfisher, which, however, are doubtless those of a true Kingfisher. Mr. Blyth informs me, however, that it replaces on the coast *Alcedo bengalensis* of the interior.

The figures in the accompanying plate represent a male and female collected by Mr. Wallace during his expedition to the Malay Archipelago, the former being from Lombock in Lord Walden's collection, the latter from Macassar in my own cabinet. The former of these two birds has been made the subject of the detailed description of the species given in the present article.

ALCEDO QUADRIBRACHYS.

ALCEDO QUADRIBRACHYS.

(DARK-BLUE KINGSFISHER.)

Alcedo quadribrachys . . . . . Bonap. Consp. Gen. Av. I, p. 158 (1850).

A. torque pectorali nullâ: abdomine intensè rufo: major: rostro longiori: pileo obscure cyaneo fasciato.

Hab. in Africâ occidentali et in prov. Natalensi Africæ Australis.

Head, neck, cheeks and scapulars rich ultramarine; the whole of the back and upper tail-coverts rich cobalt; a small spot in front of the eye and a longitudinal patch of feathers along the sides of the neck white tinged with rufous; wing-coverts blackish washed with ultramarine, quills blackish, the inner web pale fulvous at the base, the outer web edged with blue; tail blackish margined with blue; throat white; rest of the under surface of the body deep rufous; a patch of feathers on each side of the upper part of the breast rich ultramarine; bill black; feet red; eye black. Total length 6·5 inches, of bill from front 1·6, from gape 2·1, wing 2·9, tail 1·3, tarsus 0·3, middle toe 0·3, hind toe 0·35.

Hab. Senegal (*Swains. mus. Cantabr.*), River Gambia (*mus. R. B. Sharpe*), Dabocrom (*Pel*), Cameroons (*mus. R. B. Sharpe*), Gaboon (*Verreaux*), Camma River (*Du Chaillu*), Buffalo River, Natal (*Jules Verreaux*).

The name *quadribrachys* was applied to the present species by the late Prince Bonaparte (from a MS. name of Temminck's in the Leiden Museum), to distinguish it apparently from the three-toed Australian Kingfisher, *Alcyone azurea*, to which it bears at first sight a certain resemblance. But its nearest ally is the Malayan *Alcedo asiatica*, to which it closely assimilates. The sexes, however, are alike in the present species, as far as I know, and it may further be distinguished by its larger size. The blue bars on the head are also not so distinct as in its Malayan congener.

MM. Jules and Edward Verreaux in their valuable papers on the Ornithology of Gaboon (*l.c.*) have given a very excellent diagnosis of this beautiful Kingfisher. They

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Additional references.—*Alcedo quadribrachys*, Verr. Rev. et Mag. de Zool. 1851, p. 267; Reich. Handb. *Alced.* p. 5 (1851); Strickl. Contr. to Orn. 1851, p. 134, pl. lxxix; Cass. Cat. Hale. Phil. Mus. p. 2 (1852); Bonap. Consp. Vol. Anis. p. 10 (1854); Hartl. Journ. f. Orn. 1854, p. 3; Müll. Journ. f. Orn. 1855, p. 8; Hartl. Journ. f. Orn. 1855, p. 360 et Orn. Westafr. p. 34 (1857); Schl. Handl. der Dierk. pl. iv. fig. 43 (1857); Jard. Mem. of Strickl. p. 331 (1858); Cass. Proc. Phil. Acad. 1859, p. 34; Gurney, Ibis. 1859, p. 245; Heine, Journ. f. Orn. 1860, p. 187; Hartl. Journ. f. Orn. 1861, p. 105; Du Chaillu, Eq. Afr. p. 472 (1861); Schl. Mus. Pays Bas, *Alced.* p. 9 (1863); Layard, B. of S. Afr. p. 66 (1867); Sharpe, Ibis 1869, p. 283; Gray, Handl. of B. p. 95 (1869).

state that its food consists of fish, which it catches after the manner of our Kingfisher by plunging into the water. The female differs from the male only in having the base of the under mandible reddish. The young bird, according to the notes of these Ornithologists, may be distinguished by the back, which is of a greenish blue, and by its slightly smaller size. The breast has also the feathers washed with shining blue, and the blue of the other parts of the body is less bright than in the adult bird.

Mr. Gurney (*l.c.*) publishes a very interesting note by Mr. Ayres on the habits of the present species, as observed by him in Natal. He says that it feeds entirely on fish, and does not, however, like *Ceryle rudis*, but darts on its prey from a bough above the water. It frequents both the coast and the interior.

I am inclined to believe, however, that the bird to which Mr. Ayres here refers is *Alcedo semitorquata*, for one of the specimens collected by him and afterwards presented by Mr. Gurney to the Museum at Kings' Lynn is labelled *Alcedo quadribrachys*, but belongs really to the above-named species. Moreover, on my writing to Mr. Ayres to forward me a Natal specimen of the present species, he sent me *A. semitorquata*. I have, however, given the locality as a habitat for *A. quadribrachys*, for my friend M. Jules Verreaux assures me that he himself shot a pair on the Buffalo River in 1832.

The description and measurements, as well as the accompanying figure, are from a fine specimen in my collection from Gaboon.

ALCEDO SEMITORQUATA. ad.& juv.

ALCEDO SEMITORQUATA.

(HALF-COLLARED KINGFISHER.)

Alcedo semitorquata, ... Swains. Zool. Illustr. pl. 151 (1823).
Alcedo azureus, ... Less. Traité d'Orn. p. 243 (1831).

A. torque pectorali nullâ : abdomine aurantiaco.

Hab. in Abyssiniâ, in Africâ occidentali et australi.

Head and nape deep blue, banded with bright blue, the sides of the head above the ear-coverts being of an exceedingly rich colour; back very rich cobalt; scapularies washed with bright blue; wing-coverts blue, spotted with cobalt; wing-feathers black, the inner web whitish from the base, the oute rweb broadly edged with blue, especially on the secondaries; tail blue above, black beneath; throat and a longitudinal patch of feathers along the sides of the neck white, the latter slightly tinged with orange; a very small loral spot light yellowish; under-surface of the body orange, the upper part of the breast having a large patch of blue feathers on each side, forming a half-collar; bill black; feet red. Total length 7.5 inches, of bill from front 1.8, from gape 2.3, wing 3.2, tail 1.8, tarsus 0.25, middle toe 0.5, hind toe 0.25.

Hab. Abyssinia (*Rüppell*, *Heuglin*, *Blanford*), Senegal (*mus. Hein.*), Orange River (*mus. R. B. Sharpe*), Cape Colony (*Layard*), Caffraria (*Brehm*, *mus. Lugd.*), Zambesi River (*mus. G. D. Rowley*).

This species is called the 'Half-collared' Kingfisher, from its having the blue

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Additional References.—*Alcedo semitorquata*, Rüpp. Syst. Ubers. p. 20, t. 7 (1845), Kaup. Fam. *Alced.* p. 17 (1848), Gray and Mitch. Gen. of Birds, I, p. 63 (c. 1844), Gray, Cat. Fiss. Brit. Mus. p. 63 (1848), Bonap. Consp. Gen. Av. I. p. 159 (1850), Reich. Handb. *Alced.* p 5, t. ccccxcv, fig. 3054-55 (1851), Cass. Cat. Hale. Phil. Mus. p. 4 (1852), Hartl. Journ. f. Orn. 1854, p. 3, id. Orn. Westafr. p. 34 (1857), Müll. Journ. f. Orn. 1855, p. 8, Heugl. Sitz. Akad. Wien, 1856, p. 271, Cab. and Heine, Mus. Hein. th. II. p. 143 (1860), Hartl. Journ. f. Orn. 1861, p. 105, Schl. Mus. Pays, Bas. *Alced.* p. 10 (1863), Heugl. Journ. f. Orn. 1864, 332, Layard, Birds of S. Afr. p. 65 (1867). *Alcedo azureus*, Puch. Rev. et Mag. de Zool. 1853, p. 385.

patches of feathers on each side of the breast rather more largely developed than usual in the genus *Alcedo*, and nearly meeting in the centre.

Very little is known concerning the habits of this Kingfisher, but they are doubtless similar to those of our own well-known bird. I cannot find any difference between specimens from different parts of Africa. My friend Mr. W. T. Blanford very kindly submitted to my inspection the only specimen obtained by him during the late Abyssinian Expedition, and this is apparently identical with a specimen from the Cape, sent me by Mr. Layard. It would appear to be most numerous in this latter locality, being locally distributed in Abyssinia, and decidedly rare in Western Africa. I have a fine pair in my collection, from the Orange River, and also some specimens obtained at Knysna by the late Mr. Andersson, while Mr. Layard has recorded its occurrence in the actual vicinity of Cape Town.

Dr. Th. von Heuglin informs us that the present species is found in "Schoa and Abyssinia, generally along the banks of the small rivulets, especially in the marshy ground near Takasseh, between 2,000 and 6,000 feet above the level of the sea."

Mr. Blanford obtained his specimen near Adigrat at an elevation of nearly 8,000 feet.

The description and measurements are taken from a fine male specimen in my collection, from the Orange River. The hinder figure represents a young bird with blackish markings on the breast, for the opportunity of figuring which I am indebted to the kindness of Mr. G. Dawson Rowley, who has on several other occasions rendered me valuable assistance in my study of Birds.

ALCEDO EURYZONA.

ALCEDO EURYZONA.

(BROAD-BELTED KINGFISHER.)

Alcedo euryzona	Temm. Pl. Col. livr. 83, text only (1830).
Alcedo nigricans	Blyth, Journ. As. Soc. Beng. 1847, p. 1180.
"*Alcedo cyanocephala*, Shaw"	Raffl. Trans. Linn. Soc. XIII, p. 293 (*err.*)

A. torque pectorali lazulinâ: major: scapularibus nigris saturato beryllino lavatis.

Hab. in subregione Indo-Malayanâ.

Adult. Head black, narrowly banded with dark berylline blue; ear-coverts obscurely, cheeks profusely striped with brighter blue; a patch of feathers along the sides of the neck orange; scapulars black, washed with dark berylline-blue; wing-coverts black, banded with bright blue, each band having a brighter streak of blue down the centre; quills brownish black, pale orange at the base, externally washed with dark berylline-blue; entire back rich silvery blue; tail dark greenish blue above, black beneath; a very small spot in front of the eye pale orange; throat and abdomen white, the latter tinged with orange; a broad band across the breast bright lazuli blue; bill black; feet red. Total length 8·0 inches, of bill from front 1·9, from gape 2·4, wing 3·4, tail 1·4, tarsus 0·4, middle toe 0·5.

Young. Head brown, obscurely barred or rather specked with dull blue; cheeks blackish brown striped with bright berylline blue; a spot between the bill and the eye deep sienna; a small tuft of feathers at the base of the lower mandible pale sienna; a large longitudinal patch of feathers at the side of the neck, white strongly tinged with deep sienna; and in consequence of the shortness of the crest feathers, these feathers on the side of the neck nearly meet behind the neck and almost form a nuchal collar; scapulars brown; wing-coverts brown spotted with bright blue, not banded as in the adult; quills brownish black, the secondaries narrowly edged with greenish blue; entire back silvery blue, but not so brilliant as in the adult; tail brownish black above, slightly glossed with green, dark brown beneath; throat white, tinged with pale sienna; rest of the under surface of the body chesnut, with no appearance of a breast-band, but a small patch of feathers on each side of the upper part of the breast brownish black slightly glossed with blue; upper mandible dark brown, lower one yellowish; feet red. Total length 6·5 inches, of bill from front 1·6, from gape 2·0, wing 3·1, tail 1·3, tarsus 0·4, middle toe 0·5, hind toe 0·2.

Additional references.—*Alcedo euryzona*, Gray, Gen. of Birds, I, p. 81 (1847), id. Cat. Fiss. Brit. Mus. p. 63 (1848), Kaup. Verh. Nat. Ver. Darmst. 1848, p. 77, Bonap. Consp. Gen. Av. I, p. 159 (1850), Reich. Handb. *Alced.* p. 4 (1851), Cass. Cat. Halc. Phil. Mus. p. 1 (1852), Bonap. Consp. Vol. Anis. p. 9 (1854), Horsf. & Moore, Cat. Birds Mus. E. I. Co. I, p 129 (1854), Schl. Mus. Pays Bas. *Alced.* p. 10 (1863), id. Vog. Ned. Ind. pp. 7, 45, pl. 1 (1864), Blyth, Ibis, 1865. p. 30 et 1866, p. 348, Gray, Hand-list of Birds, p. 95 (1869). *Alcedo nigricans*, Blyth, Cat. Birds Mus. As. Soc. Beng. p. 49 (1849).

Hab. Malacca (*Blyth*, *mus. Calc.*), Sumatra (*Raffles*, *mus. Ind.*), Java (*Müller*, *mus. Lugd.*), Borneo (*mus. Philad.*).

This is a very rare species in collections, and I am greatly indebted to Professor Schlegel for lending me specimens from the Leiden Museum for figuring in the present work. I know of only one example in this country, which is in the British Museum ; and I have entirely failed to procure a single bird for my own collection. My friend Mr. W. T. Fraser, of Soerabaya, has done his utmost to get me specimens; but the success which has waited on his kind endeavours as regards the other species of Javan Kingfishers has not attended him in the present instance, for he writes to me that on only one occasion has he met with the Broad-belted Kingfisher, and then he had not his gun at hand. He rushed off for the latter at once, but unluckily on his return the bird had flown.

The nearest ally to the present species is *Alcedo grandis*, but the resemblance is only in form ; for neither in this nor in any other species of the genus *Alcedo* is there such a vast difference in the young and adult birds as is exhibited in *Alcedo euryzona*. It would seem to imply that the bird is rather a recent species on the face of the globe, and that the species from which it was originally evolved was a true *Alcedo* in style of coloration and form, traces of the original ancestor being preserved in the young plumage of the bird of the present day.

I can give no details of the habits of the present species, but it doubtless resembles our Common Kingfisher in this respect. The figures are taken from specimens lent to me from Leiden by Professor Schlegel. The adult bird described and figured is Temminck's original type, which was procured in Java by S. Müller ; the young bird was brought by Dr. Horner from Sumatra.

ALCEDO BERYLLINA.

ALCEDO BERYLLINA.

(BERYL KINGFISHER.)

Alcedo beryllina, ... Vieill. Nouv. Dict. d'Hist. Nat. xix, p. 414 (1818).
Alcedo biru, ... Horsf. Trans. Linn. Soc. xiii, p. 172 (1822).
Alcedo cærulescens, ... Bon. et Vieill. Encl. Meth. I, p 394 (1823).
Petit Martin-pecheur aigue marin . Temm. Cat. Syst. p. 213 (1807).
Meningting-watu and *Burong-biru*, of the Natives of Java (*Horsfield*).

A. torque pectorali lazulinâ: minor: scapularibus beryllinis.

Hab. in insulis dictis 'Java,' 'Lombock,' 'Timor.'

Above beryl-blue, with transverse bars of brighter blue on the head; back very rich silvery cobalt; wing-feathers blackish, the inner web white near the base, the outer webs edged with bright blue; throat, abdomen, a patch of feathers along the sides of the neck, under wing- and tail-coverts pure white; a band across the upper part of the breast extending a little way down the sides deep lazuli-blue; bill black; feet dark olive-brown. Total length 4.8 inches, of bill from front 1.3, from gape 1 6, wing 2.4, tail 0.9, tarsus 0.2, middle toe 0.45, hind toe 0.2.

Hab. Java, (*Horsfield*), Lombock (*Wallace*), Timor (*Vieillot*).

This beautiful little Kingfisher is a native of Java, whence it seems occasionally to stray into the islands of the Indo-Malayan Archipelago, since Mr. Wallace obtained it in Lombock, and, according to Vieillot, the original specimens in the Paris Museum came

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Additional References.—*Alcedo beryllina*, Hartl. Contr. to Orn. 1849, p. 20, Cass. Cat. Hale. Phil. Mus. p. 2 (1852). Schl. Mus. Pays Bas, *Alced.* p. 11 (1863), id. Vog. Ned. Ind. *Alced.* pp. 8, 45, pl. 3 (1864). *Alcedo biru*, Temm. Pl. Col. 239 (1823), Horsf. Zool. Research. in Java, pl. — (1824), Gray, Gen. of Birds, I. p. 81 (c. 1844), Blyth, Journ. As. Soc. Beng. xv, p. 12 (1846), Gray, Cat. Fiss. Brit. Mus. p. 63 (1848), Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849), Bonap. Consp. Gen. Av. I. p. 158 (1850), Reich. Handb. *Alced.* p. 4, t. ccexciv, fig. 3052-53 (1851), Puch, Rev. Zool. 1853, p. 389, Bonap. Consp. Vol. Anis. p. 9 (1854), Horsf. & Moore, Cat. Birds Mus. E.I. Co. I, p. 130 (1854), Hartl. Journ. f. Orn. 1855, p. 423, Wall. P.Z.S. 1863, p. 484.

from Timor. Professor Temminck states that it is an inhabitant of Sumatra, and the same locality is assigned to it by Professor Schlegel, but not apparently on any good authority, as the Leiden Catalogue does not enumerate a single specimen from that island. My belief is, that it does not occur in the island of Sumatra at all, and I have no evidence of its occurrence in any other part of Java except the eastern portion. It is a rare bird in collections.

Dr. Horsfield has given us the following interesting details respecting its habits.

"This bird is by no means uncommon in Java. I observed it chiefly in the interior, in low situations; but it is also found in the maritime districts. Its habits and manners are those of the European Kingfisher. It darts in short rapid flights along the surface, among rivulets and lakes, emitting as it moves shrill sounds in a high key. These sounds are so strong and acute, that, when the bird is near, they strike the ear in an unpleasant manner. It is not unfrequently seen perched on trees on the banks of rivulets. Its food consists of small fishes and aquatic insects."

A few more notes on its habits are found in Professor Schlegel's 'Catalogue' from the pen of Viscount de Bocarmé, which I transcribe.

"It is common enough along the creeks and at the mouths of the rivers, where it skims over the water in its rapid flight, often precipitating itself headlong in pursuit of little fishes. Its habits, in fact, are identical with those of the European Kingfisher."

I am indebted to my friend Mr. Wallace for the following observations:—

"This species is less of a forest bird than its ally *A. meningting*, being found chiefly in the plains of East Java and Lombock on the banks of the river. It has very much the habits of our own Kingfisher, and feeds, I believe, mainly on minute fish."

I have taken the description and measurements from a beautiful male bird, shot in the neighbourhood of Sourabaya, Java, by my friend Mr. W. T. Fraser, and sent home by him for my collection. From his bird the figure is also drawn. On examining the series of birds sent to me by Mr. Fraser, I am inclined to believe that the blue breast-band is gradually assumed, and that in very young birds it is absent.

CORYTHORNIS VINTSIOIDES.

CORYTHORNIS VINTSIOIDES.

(DUSKY-CRESTED KINGFISHER.)

Alcedo vintsioides, ... Eyd. et Gerv., Rev. et Mag. de Zool. 1836, p. 30, pl. 74.
Corythornis vintsioides, . . . Kaup, Fam. *Alced.* p. 12 (1848).
Ispida philippensis cristata, . . Briss. Orn. IV, p. 463, pl. xxxvii (1760).
Vinchi or *Bintsi*, of the Natives of Madagascar (*Newton, Pollen*).

C. rostro nigerrimo: suprà lætè ultramarina: cristâ fuscescente-cyaneâ.

Hab. in insula 'Madagascar' dictâ in insulis adjacentibus.

Crown of the head crested, the feathers being dusky-green, with black shafts and a bar of black near the tip; sides of the head, back of the neck and entire upper-surface brilliant ultramarine; wing-coverts black, washed and spotted with ultramarine; quills blackish, the inner web bright rufous at the base, the secondaries externally washed with ultramarine; tail ultramarine above, black beneath; chin and a longitudinal patch of feathers along the sides of the neck pure white; cheeks and rest of the under-surface of the body bright rufous; bill black; feet red. Total length 5.3 inches, of bill from front 1.2, from gape 1.5, wing 2.3, tail 1.0, tarsus 0.25, middle toe 0.45, hind toe 0.2.

Hab. Madagascar, and adjacent islands (*Newton, Pollen and Van Dam*).

The first description of this little Kingfisher is to be found in Brisson's 'Ornithologie' (*l.c.*) where, however, the habitat is wrongly stated to be the Philippine Islands, but as in addition to the very careful diagnosis given, the bird is said to be called by the natives 'Vintsi,' which is well known to be the native appellation in Madagascar for the present

Additional References.—*Corythornis vintsioides*, Gray, Gen. of Birds, app. p. 5 (1848), Bonap. Consp. Gen. Av. I, p. 164 (1850), Reich. Handb. *Alced.* p. 19, t. cccxci b. fig. 3404-5 (1851), Cass. Cat. Hale. Phil. Mus. p. 5 (1852), Bonap. Consp. Vol. Anis. p. 10 (1854), Hartl. Journ. f. Orn. 1860, p. 86, id. Faun. Madag. p. 31 (1861), Roch and Newton, Ibis, 1862, p. 271, Newton, Ibis, 1863, p. 341. *Alcedo vintsoides*, Schl. Mus. Pays *Alced.* p. 12; id. P.Z.S. 1866, p. 421; Schl. and Poll. Faun. Madag. Ois. p. 59 (1868).

species, there can be no doubt that the specimen described by Brisson really came from that island.

The rarity of *Corythornis vintsioides* in collections, and our comparatively small knowledge of the ornithology of Madagascar, renders the account of its habitats very meagre, but in the valuable work recently published by Messrs. Pollen and Van Dam we find the following interesting passage concerning it:—

"This bird is very common in Madagascar and Mayotte. It is always to be seen on the borders of the rivers, brooks, lakes, cataracts, and in the forests of mangroves which extend along the sea-coast. It feeds on little fishes and certain aquatic insects, on which it precipitates itself with great rapidity. In other respects it lives in the same manner as our common Kingfisher, and has a very similar cry. At Mayotte it is often seen perched on the leaves of the sugar-cane, near the canals which traverse the fields, having its eyes continuously fixed on the water, and awaiting, with patience, the moment when a little fish or an insect presents itself underneath, to precipitate itself upon it swiftly by plunging into the water. Having seized its prey, it returns to devour it, to the branch that it has just quitted ; it may be seen lifting its crest, raising and lowering its head, and remaining, often for an hour together, in an almost immovable position. This species is by no means shy, and allows itself to be easily approached. It lives almost always solitary, sometimes in pairs, and it is only on rare occasions that more than three individuals are seen together. We have found this bird at Mayotte, Nossi-bè, Nossi-falie, Tani-kely, Nossi-Bourrah and Madagascar. In this latter island it bears the name of 'Bintsi.'

Messrs. Roch and Newton state (*l.c.*) that in Madagascar this species was "tolerably common along the coast, and observed up the country as far as Beforona," and the latter gentleman observed (*l.c.*) it on his second visit to the island, to be as "common as it was last year."

The description, measurements, and plate are taken from a beautiful male bird in my collection, procured from the 'Maison Verreaux.'

CORYTHORNIS CRISTATA. ad & juv.

CORYTHORNIS CRISTATA.

(MALACHITE CRESTED KINGFISHER.)

Alcedo cristata, ...	Linn. Syst. Nat. I, p. 178 (1766).
Corythornis cristata, ...	Kaup. Fam. *Alced.* p. 13 (1848).
Alcedo cyanostigma	Rüpp. Neue Wirb. pl. 24 (1835).
Corythornis cyanostigma . . .	Kaup. Fam. *Alced.* p. 13 (1848).
Alcedo cyanostigmata, ...	Des Murs, Voy. en Abyss. Zool. p. 81 (c. 1848).
Petit Martin-pecheur de l'Isle de Luçon .	Buff Pl. Enl. 756.

C. rostro lætè corallino: cristâ longissimâ malachitaceâ.

Hab. in totâ regione Æthiopicâ.

Adult Male. (South Africa). Head with a malachite-green crest, each feather being greenish-blue with a black shaft, and crossed by two black bands, the tip of the feather being black preceded by a band of blue; the feathers at the sides of the crest elongated and broader; sides of the head and entire upper surface of the body, rich ultramarine; wing-coverts blackish washed with blue; quills brownish black, the secondaries edged with faint ultramarine; tail ultramarine above, black beneath; chin and a longitudinal patch of feathers along the sides of the neck, white; cheeks, ear-coverts, and rest of the under-surface of the body, rich rufous; bill and feet coral-red.

Young female. Head crested, dusky-greenish, with very broad black shafts and bands, the feathers on the nape with a slight silvery lustre; back and scapularies light brown with light cobalt bars; back ultramarine washed with cobalt; tail ultramarine above, brown beneath; quills light brown, the inner web light rufous from the base, the outer web edged with light ultramarine; lores light rufous; cheeks rufous with little black markings;

Additional references.—*Alcedo cristata,* Gm. Syst. Nat. I, p. 447 (1788), Shaw, Gen. Zool. VIII, p. 98, pl. 12 (1812), Lath. Gen. Hist. of Birds, IV, p. 45 (1822), Licht. Verz. Doubl. p. 12 (1823), Bon. et Vieill. Encl. Meth. I, p. 295 (1823), Guerin Menev. Iconogr. pl. 28 (1819), Kittl. Kupf. Vog. pl. 29 (1833), Gray, Gen. of Birds, I, p. 81 (c. 1844), id. Cat. Fiss. Brit. Mus. p. 64 (1848), Des Murs, Voy. en Abyss. Zool. p. 82(c. 1848), Bonap. Consp. Gen. Av. I, p. 159 (1850), Hartl. Beitr. Orn. Westafr. p. 18 (1852), id. Journ. f. Orn. 1854, p. 5, Verr. Rev. et Mag. de Zool. 1855, p. 353, Müll. Journ. f. Orn. 1855, p. 8, Hartl. Orn. Westafr. p. 36 (1857), Heugl. Journ. f. Orn. 1862, p. 289, Schl. Mus. Pays Bas, *Alced.* p. 11 (1863), Kirk, Ibis, 1864, p. 325, Layard, Birds of S. Afr. p. 65 (1867), Hartl, and Finsch, Orn. Ostafr. p. 167 (1869). *Corythornis cristata,* Reich. Handb. *Alced.* p. 18, t. ccciii, fig. 3176-77 (1851) Cass. Cat. Halc. Phil. Mus. p. 4 (1852), Bonap. Consp. Vol. Anis, p. 10 (1854), Gurney, Ibis, 1859, p. 245, Cab. and Heine, Mus. Hein, th. II, p. 146 (1860), Hartl. Journ. f. Orn. 1861, p. 105, Heugl. Journ. f. Orn. 1864, p. 333, Bocage, Jorn. Acad. Lisb. I, p. 134, (1868), Sharpe, Ibis, 1869, pp. 280, 283. *Alcedo cyanostigma,* Ferr. et. Gal. Voy. en Abyss. Zool. III, p. 248 (1847), Gray, Gen. of Birds, I, p. 81 (c. 1844, id. Cat. Fiss. Brit. Mus p. 64 (1848), Bonap. Consp. Gen. Av. I, p. 164 (1850), Heugl. Sitz. Akad. Wien, 1856, p. 270, Schl. Mus. Pays Bas, *Alced.* p. 11 (1863), Antin. Cat. Descr. Coll. Ucc. p. 29 (1864), Hartm. Journ. f Orn. 1864, p. 226, id. Journ. f. Orn. 1865, p. 203. *Corythornis cyanostigma,* Reich. Handb. *Alced.* p. 19, t. cccxcv, fig. 3057-58 (1851), Cass. Cat. Halc. Phil. Mus. p. 4 (1852), Müll. Journ. f. Orn. 1855, p. 8.

throat and a patch of feathers along the sides of the neck yellowish white; under surface of the body pale rufous, lighter down the centre of the body; bill and feet blackish, tinged slightly with red. Total length 5.0 inches, of bill from front 1.3, from gape 1.75, wing 2.4, tail 1.1, tarsus 0.25, middle toe 0.7, hind toe 0.3. (*Right-hand figure.*)

Very young. Similar to the last, but the plumage much darker brown, the bars of blue being narrower and those on the head darker; the bars of cobalt on the wing-coverts and scapularies very distinct, upper part of the breast marked with a darkish brown line. Total length 4.3 inches, of bill from front 0.8, from gape 1.05, wing 2.0, tail 1.65, tarsus 0.2, middle toe 0.4, hind toe 0.2. (*Left-hand figure*).

Hab. Abyssinia (*Heuglin*), Tigrè; Dongola, Agula (*Blanford*), Nubia (*Lichtenstein*), White Nile (*Petherick*), River Gambia (*mus. R. B. Sharpe*), Bissao (*Verreaux*), Casamanze (*Verreaux*), Fantee (*Bowditch*), Ashantee (*mus. J. Gould*), Bonny River (*Jardine*), Gaboon (*Verreaux*), St. Thomas (*mus. Lisb.*), Angola (*Monteiro*), Cape Colony (*Layard*), Natal (*Ayres*), Transvaal (*Ayres*) Caffraria (*Wahlberg*, *Bulger*), Zambesi (*Kirk*).

In a paper recently published in the "Ibis," I entered fully into the question of the various races of this species to be met with in the Æthiopian Region, and came to the conclusion that, beyond the larger size of the South African birds, there was nothing to justify their separation from the form occurring in Western Africa and Abyssinia. At the time I wrote that article I laboured under the disadvantage of not being able to examine more than one specimen from North Eastern Africa, an imperfect skin sent from the White Nile by Consul Petherick, for the opportunity of inspecting which, I was indebted to my kind friend Mr. Gould. I decided, however, that there was no reason to separate the Abyssinian bird as a distinct species, and subsequent experience have proved the correctness of this view, for Mr. W. T. Blanford, the Geologist attached to the late Abyssinian Expedition, had the courtesy to submit to me two specimens obtained by him during his sojourn in that country. These evidently belong to the same small race as the bird from the White Nile. I subjoin the measurements of the two Abyssinian specimens, and those of the other birds from Western and South Eastern Africa examined by me in my paper in the "Ibis."

No.	Sex.	Locality.	Authority.	Long tot.	Rostr.	Al.
1	♂	Agula	Blanford	4·6	1·15	2.25
2	♂	Dongolo	Blanford	4·6	1.2	2·2
3		White Nile	Petherick	4·75		2·1
4		R. Gambia	mus R. B. S.	4·70	1·15	2·2
5		Benguela	Monteiro	4·80	1·15	2·2
6	♂	West Africa	Verreaux	5·00	1·25	2·1
7		Natal	Ayres	5·20	1·20	2·3
8		Natal	Ayres	6·00	1·20	2·3
9		Cape Colony (?)	mus. R. B. S.	5·30	1·30	2·3

It will be seen at a glance that the bird from Western Africa is intermediate in size between the one from Abyssinia and that from South Africa. Should, however, some future Ornithologist be bent upon separating the Abyssinian bird as distinct, it must bear the name of *Corythornis cyanostigma*, as the type of this supposed species came from Abyssinia.

The *Alcedo cyanostigma* of Rüppell has generally been considered distinct, and I admit that taking the two birds separately without having a series for comparison, they would be pronounced to be different. But it is really no other than the young of *C. cristata*. Dr. Hartlaub, indeed, in his very valuable work on West African Ornithology, takes this view, but in the new work on East-African Ornithology, I see the authors grant specific rank to Rüppell's bird. Dr. Cabanis supposes *A. cyanostigma* to be the young of *C. cæruleocephala*, but this also is erroneous, as we have by the exertions of Mr. Keulemans been

made thoroughly acquainted with the young of the latter species, and can affirm that it is quite different. I had the pleasure of exhibiting to Dr. Finsch on his recent visit to this country, the fine series of *C. cristata* in my collection, and he quite agreed with me in my conclusion as to the bird figured by Rüppell (*l.c.*) being only the young. All the species of *Corythornis* and some of *Ispidina* (all, I believe, except *I madagascariensis*), when immature, have the body varied with cobalt bars, which gradually disappear as the bird becomes adult. To illustrate this as well as I could, I have had three stages of plumage figured in the plate accompanying this description. The centre bird is fully adult; that on the left hand represents the youngest specimen in my collection, and which could not long have left the nest, while on the right is given a figure of a young bird, corresponding as nearly as possible to the age of Rüppell's *A. cyanostigma*.

The present species is spread over the whole of the Æthiopian region, and is nowhere very rare. Dr. Finsch, however, thinks that the bird from the island of St. Thomas, stated to be this species by Professor Barboza du Bocage, is more likely to be *C. cæruleocephala* and I agree with the learned doctor in this supposition. Nevertheless, Mr. Keulemans expresses his belief from personal observation, that the true *C. cristata* is occasionally found there, and he also informs me that, according to the natives, a bird with a very long crest was sometimes met with in Prince's Island, so that it may be an occasional visitor there also. That these little Kingfishers do sometimes take long flights, Mr. Keulemans is certain, for in some of his excursions to the different islands, he has seen them out at sea, skimming along the water, at least five miles from the nearest point of land.

Mr. Layard (*l.c.*) observes:—"This beautiful little Kingfisher is abundant throughout the colony, wherever a stream or marsh exists which can supply it with its necessary food. It breeds in banks, and lays four or five glistening white eggs, so transparent that the yellow yolk shines plainly through the shell. I have not myself seen the nest, but have been assured by many who have, that it consists of nothing but the bones of the delicate little fish upon which the bird habitually feeds." In the immediate neighbourhood of Cape Town, however, it seems to be not very common, for my friend Mr. Layard exerted himself vigorously to procure me some specimens, but without success, till at last he got quite by chance two at once, both young birds, which killed themselves by flying against a building in Cape Town.

Mr. Ayres' notes on the present species in Natal are as follows:—

"Eye black; legs and bill brilliant red; frequents both the coast and interior streams, and feeds on fresh water shrimps and small fish, but principally the former; also on beetles and insects; darts from a bough on its prey. Builds in holes in the banks, merely forming a small round chamber at the end of the hole."

Mr. Ayres has lately sent some eggs to the Rev. H. B. Tristram, and I am indebted to Mr. Gurney for the following note which was received by him from the same indefatigable collector. He observes:—

"It bores a hole some two feet deep in the bank of a river or streamlet, forming a small round chamber at the end, in which four pretty white eggs are laid."

The following details have been kindly supplied me by Mr. J. J. Monteiro:—

"This beautiful little species is not uncommon all over Angola, particularly on the smaller rivers and lakes. It is a lovely object, as it flies actively about from twig to twig low over the water, and it has a pretty way when standing still of raising and depressing its beautiful little fan-like crest."

Dr. Kirk in his paper on the "Birds of the Zambesi Region" informs us that it is "universal on all the waters, sitting on the reeds or bushes which overhang them, and darting on its prey. A larger species of *Alcedo* was observed among the rapids of the Shiré, but not anywhere else." I think this last species must have been *Alcedo semitorquata*, which is in Mr. Dawson Rowley's collection from the Zambesi.

In Abyssinia, according to von Heuglin, the present species is "common and resident in Abyssinia, up to 10,000 feet above the level of the sea, but is rarer in the Bogos Country."

Mr. Blanford has very kindly given me the accompanying note:—

"I found this Kingfisher only on the highlands of Abyssinia but never much above 7,000 feet above the sea. I did not meet with it on the Anseba, and suspect that it is confined to the temperate region. It keeps to the banks of streams, and has, so far as I had opportunities of judging, precisely the flight and habits of *Alcedo ispida*, sitting on a branch over the water and thence dashing down upon fish, and when disturbed skimming rapidly along the stream just above the surface of the water. I never saw it far from water. It was not very common."

Des Murs in Lefebvre's "Voyage en Abyssinie" observes:—

"The first example was found on the river Assem near Adoua on the 25th of July, 1839, and a second was killed on the river of Waye Gonagona on the 7th of April, 1840. The bird has all the flight and habits of our common species, and frequents the borders of the rivers."

It will be seen from the accompanying observations of the Messieurs Verreaux, that their experience of the Abyssinian race being about the same size as the South African, is exactly contrary to my own and if their observations in this respect be correct, there can no hesitation in the mind of any Ornithologist in uniting the *C. cristata* from all parts of Africa under one and the same specific designation. I suspect, however, that as it is the case with so many other African birds, two races differing only in size may be found to inhabit respectively the highlands and plains of the same country. The above-named Ornithologists have given us the following note:—

"This species exactly resembles that of South Africa, which appears to be widely diffused; for we can find no difference whatever, except the variation of size, the numerous examples which have passed through our hands during the thirty years we have busied ourselves with the study of Natural History and of Ornithology principally."

"We must state, however, that specimens from certain localities on the West Coast appear to us to be of a smaller size, while those from the Eastern portion, on the young of which our colleague, M. Rüppell, has founded his *A. cyanostigma*, entirely resemble those from the Cape of Good Hope. We have gained proofs of this by the comparison that we have made during our journeys among public museums. For the rest, its manners are the same as the *Alcedo ispida* of Europe. In the adult birds, no difference exists between the sexes; both have the iris clear blue, with the beak and feet lively red."

The description and measurements are from specimens in my own collection.

CORYTHORNIS COERULEOCEPHALA, ad. & juv.

CORYTHORNIS CÆRULEOCEPHALA.

(BLUE-CRESTED KINGFISHER.)

Alcedo cæruleocephala, ...	Gm. Syst. Nat. I, p. 449 (1788).
Corythornis cæruleocephala	Kaup. Fam. *Alced.* p. 13 (1848).
Alcedo cyaneocephala, ...	Shaw, Gen. Zool. VIII, p. 100 (1812).
Alcedo cyanocephala, ...	Hartl. and Finsch, Orn. Ostafr. p. 163 (1869).
Corythornis cyanocephala, ...	Cab. and Heine, Mus. Hein. th. II. p. 145 (1860).
Corythornis nais	Kaup, Fam, *Alced.* p. 12 (1848).
Alcedo nais, ...	Gray, Cat. Fiss. Brit. Mus. p. 64 (1848).
Petit Martin-pecheur de Senegal . . .	Buff. Pl. Enl. 356.

C. rostro corallino: cristâ breviori, lætissimè cyaneâ.

Hab. in Africâ occidentali, in Abyssiniâ et in Africâ eur-australi.

Head brilliant blue, with a long crest, each feather of which is blue with a black shaft and crossed by two black bands near the tip; sides of the head and rest of the upper surface of the body ultramarine; wing-coverts black spotted with ultramarine; quills blackish, the inner webs pale rufous at the base, the secondaries edged with ultramarine; tail blackish with a tinge of ultramarine above; throat and a patch of feathers along the sides of the neck, white; lores, cheeks, and the rest of the under-surface of the body rich rufous, paler in very old birds; bill and feet coral red; eyes dark brown. Total length 5 inches, of bill from front 1.3, from gape 1.6, wing 2.2, tail 0.9, tarsus 0.3, middle toe 0.45, hind toe 0.2.

Hab. North Africa (*mus. Brit.*) Fazoglo (*mus. Philad.*), Az-Johannis, Tigrè (*von Heuglin*), Senegal (*Buffon*), Gold Coast (*mus. Lugd.*), River Camma (*Du Chaillu*), Loanda (*mus. R. B. Sharpe*), St. Thomas (*Weiss, mus. Brem.*) Ilha do Principe (*Dohrn, Keulemans*), Mozambique (*mus. Hein.*).

Additional references.—*Alcedo cæruleocephala,* Lath. Hist. of Birds, IV, p. 41 (1822), Bon et Vieill. Enc. Mèth. I, p. 290 (1823), Less. Traitè d'Orn. p. 243 (1831), Gray, Gen. of Birds, I, p. 81 (c.1844), id. Cat. Fiss. Brit. Mus. p. 64 (1848), Bonap. Consp. Gen. Av. I, p. 159 (1850), Hartl. Beitr. Orn. Westafr. pp. 1, 18 (1852), Brehm. Journ. f. Orn. 1853, p. 454, Hartl. Journ. f. Orn. 1854, p. 4, Müll. Journ. f. Orn. 1855, p. 8, Schl. Mus. Pays Bas. *Alced.* p. 11 (1863), Keul. Nederl. Tidschr. III, p. 377 (1866). *Corythornis cæruleocephala,* Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849), Reich. Handb. *Alced.* p. 18, t. cccxcvii, fig. 3063, t. cccciii b. fig. 3387, (1851), Cass. Cat. Halc. Phil. Mus. p. 4 (1852), Bonap. Consp. Vol. Anis. p. 10 (1854), Cass. Proc. Philad. Acad. 1859, p. 34, Heine, Journ. f. Orn. 1860, p. 187, Hartl. Journ. f. Orn. 1861, p. 105, Du Chaillu, Equat. Afr. p. 472, (1861), Heugl. Journ. f. Orn. 1864, p. 333, Dohrn, P.Z.S. 1866, p. 825, Bocage, Jorn. Acad. Lisb. I, p. 134 (1867). *Corythornis nais,* Reich. Handb. *Alced.* p. 18 (1851), Hartl. Journ. f. Orn. 1854, p. 4, id. Journ. f. Orn. 1861, p. 105. *Alcedo nais,* Gray, Gen. of Birds, App. p. 5 (1848), Hartl. Orn. Westafr. p. 37 (1857). *Alcedo cyanocephala,* Heugl. Orn. Nord-Ost. Afr. p. 181 (1869).

Although the present species has been known ever since the time of Buffon, great uncertainty has prevailed up to the present date, as to its geographical distribution. Gmelin gives its habitat as Madagascar, and Lesson as Java, both of which localities are erroneous, and it is now known to be confined to the Æthiopian Region. I have never seen an authentic specimen from Abyssinia, although I suppose the two specimens presented by Lord Mountnorris to the British Museum from "North Africa," are really from some part of the Abyssinian sub-region. Brehm states that it is never found north of 15° n. lat., which assertion, however, needs a slight modification, as von Heuglin procured two specimens in a swamp at Az-Johannis in Tigrè, which is somewhat north of the line indicated by Brehm. As regards the existence of *Corythornis cæruleocephala* in Mozambique, I am somewhat sceptical, as no authority is given for the specimen in Heine's Museum. I hardly think its occurrence there likely, and I am by no means positive as to its being met with in Abyssinia, in all probability the small race of *Corythornis cristata* having been mistaken for it. There ought, however, to be no difficulty in identifying the present bird, as the difference in the length and colouring of the crest is at once perceptible.

According to the late Mr. Cassin, the Philadelphia Museum contains every known species of *Corythornis* and *Ispidina*, including Kaup's *Corythornis nais* and his *Ispidina nitida*. What the two birds thus designated by Mr. Cassin really are, I cannot imagine, as I have examined Kaup's types in the British Museum and find that *Corythornis nais* is nothing more than the young of *C. cæruleocephala*, and *I. nitida* is the young of *I. natalensis*, as will be seen in the account of that species. I beg leave to draw the attention of the authorities of the Philadelphia Academy to this interesting question.

Dr. Dohrn (*l.c.*) informs us that in Prince's Island the *Corythornis cæruleocephala* is "common on the shore; in a few instances I saw single specimens flying about in the interior of the island. The colour of the young bird is little different from that of old specimens; the bill is black, and the white spots on the throat and on the sides of the neck are very small. This species is as lively as *Halcyon dryas* is indolent. The native name is "Pica-peixe."

I am indebted to Mr. Keulemans for the following note on the habits of this hitherto little-known Kingfisher, as observed by him during his residence in the Princes' Island.

"*Corythornis cæruleocephala* is a common bird near the sea-shore, and in the large river near the town of St. Antonio. It is very different in its habits from *Halcyon dryas*, being altogether a much more lively bird. Its food consists of fishes and water-insects. It breeds between the months of August and January. The eggs are five in number, white, almost round, and very glossy. They are deposited in holes or in clefts of rock, but I do not know if they make any nest. When not disturbed this little Kingfisher becomes very tame, and is particularly fond of frequenting the places where the native women are engaged in washing clothes. I suspect that the water being thus disturbed causes the aquatic insects to come to the surface, when they are eagerly pounced upon by the bird, which may be seen plunging into the water every minute. The natives call it "Pica-peixe" which signifies fish catcher."

The description and measurements are taken from a very fine male bird in my collection from Loanda. The largest figure in the plate is a copy of a painting made by Mr. Keulemans in Prince's Island from a recently killed specimen, while the smaller figure represents the type-specimen of Kaup's *Corythornis nais* in the British Museum, which will, I think, be recognised at once as only the young of *C. cæruleocephala*.

ALCYONE AZUREA.

ALCYONE AZUREA.

(AZURE KINGFISHER.)

Azure Kingfisher, ...	Lath. Syn. Suppl. p. 372 (1790).
Alcedo azurea, ...	Lath. Ind. Orn. Suppl. II, p. xxxii (1801).
Ceyx azurea, ...	Steph. Gen. Zool. XIII, p. 106 (1826).
Alcyone azurea, ...	Gray, Gen. of B. I, p. 82 (1846).
Alcedo tribrachys, ...	Shaw and Nodd. Nat. Misc. pl. 281 (1804).
Ceyx tribrachys, ...	Cuv. Regn. Anim. I, p. 417 (1817).
Ceyx cyanea, ...	Less. Traité d'Orn. p. 241 (1831).
Alcedo australis, ...	Swains. Classif. of B. II, p. 336 (1837).

A. rostro tenuiore, longiore: pileo haud fasciato: hypochondriis rufis.

Hab. in Australasia.

Above bright ultramarine; wing-coverts blackish, edged with ultramarine; quills blackish, the inner web light rufous at the base, the secondaries externally edged with faint blue; tail deep ultramarine above, black beneath; a loral spot pale rufous; throat and a longitudinal patch of feathers along the sides of the neck, white tinged with orange; cheeks, ear-coverts, and sides of the upper part of the breast, bright ultramarine; rest of the under surface of the body rufous, with a lilac lustre on the flanks and under tail-coverts; bill black; feet red.

Hab. Australia. New South Wales and Southern Australia (*Gould*); Cape York (*Cockerell and Thorpe*); Queensland (*Mus. R. B. S*).

This species of *Alcyone* is the most common and widely distributed of the whole genus. It is found generally throughout Australia, being, however, replaced on the Northern Coast by *A. pulchra*, and in Tasmania by *A. diemensis*, both of which I consider to be distinct species.

The subjoined account of this species is extracted from Mr. Gould's "Handbook."

"With the exception of Swan River, every colony of Australia, from Port Essington on the North West to Tasmania in the extreme south, is inhabited by Azure Kingfishers:

Additional references.—*Alcedo azurea*, Swains. Zool. Illustr. 1st ser. pl. 26 (1820); Schl. Mus. Pays Bas, *Alced.* p. 17 (1863). *Ceyx azurea*, Jard. and Selby, Ill. Orn. II, pl. 55, fig. 1. *Alcyone azurea*, Gould, B. of Austr. II, pl. 25 (1848); id. Intr. B. of Austr. p. 31 (1848); Gray, Cat. Fiss. Brit. Mus. p. 65 (1848); Blyth, Cat. B. Mus. As. Soc. Beng. p. 50 (1849); Bonap. Consp. Gen. Av. I, p. 158 (1850); Reich, Vög. Neuh. p. 278 (1850); id. Handb. *Alced.* p. 7, t. 397, fig. 3064-65 (1851); Cass. Cat. Hale. Phil. Mus. p. 5 (1852); Macgill. Voy. Rattl. II, p. 356 (1852); Bonap. Consp. Vol. Anis. p. 10 (1854); Pelz. Voy. Novara, p. 58 (1865); Gould, Handb. B. of Austr. I, p. 139 (1865); Sharpe, P. Z. S. 1869, p. 355.

but as they, although closely allied, constitute at least three distinct species, the present page must necessarily treat exclusively of the one that inhabits New South Wales and South Australia, over the whole of which countries it is dispersed, wherever brooks, ponds, and other waters occur suitable to its habits and mode of life. In size and in brilliancy of plumage, the Azure Kingfisher is intermediate between the species inhabiting the North Coast and that found in Tasmania; although generically distinct from the Kingfisher of Europe it has many characters in common with that bird. It subsists almost exclusively on small fish and aquatic insects, which it captures in the water by darting down from some bare branch overhanging the stream, and to which it generally returns to kill and devour its prey, which is swallowed entire and head foremost, after the manner of the little favourite of our own island. It is a solitary bird, a pair, and frequently only one, being found at the same spot. During the breeding-season it becomes querulous and active, and even pugnacious if any intruder of the same species should venture within the precincts of its abode. The males at this season chase each other up and down the stream with arrow-like quickness, when, the rich azure-blue of the back glittering in the sun, they appear more like meteors, as they dart by the spectator, than birds. The task of incubation commences in August and terminates in January, during which period two broods are usually brought forth. The eggs, which are of a beautiful pearly or pinkish white and rather round in form, are deposited at the extremity of a hole, in a perpendicular or shelving bank bordering the stream, without any nest being made for their reception; they are from five to seven in number, three quarters of an inch broad by seven-eighths of an inch long. The young at the first moult assume the plumage of the adult which is never afterwards changed. The hole occupied by the bird is frequently almost filled up with the bones of small fish, which are discharged from the throat and piled up round the young in the form of a nest. Immediately on leaving their holes the young follow their parents from one part of the brook to another, and are fed by them while resting on some stone or branch near the water's edge; they soon, however, become able to obtain their own food, and may be observed at a very early age plunging into the water to a considerable depth to capture small fish and insects."

"The sexes are precisely similar in the colouring of their plumage, neither do they differ in size. The young are very clamorous, frequently uttering their twittering cry as their parents pass and repass the branch on which they are sitting."

Mr. E. P. Ramsay has very kindly forwarded me the following interesting particulars respecting the habits of the present species :—

"Now while all the members of the genus *Todiramphus* are strictly land Kingfishers, all the members of the genus *Alcyone* have just the opposite habits, being always found in the vicinity of water; they love to dwell on the sides of creeks and rivers, either salt or fresh. The present species is abundant in all parts of New South Wales, wherever water is to be found; they spend their time in watching for their prey from the branches overhanging the water-holes, creeks and rivers, edges of lakes and lagoons; in fact, wherever the trees along the water's edge afford them shelter, and the denser the foliage, the better they are pleased. They are very expert in catching fish, and plunge deeply into the water, sometimes completely under the surface. A pair have resorted for many successive breeding-seasons to a water-hole on the Dobroyde Estate, where they have tunnelled in the bank of soft clay, and they often occupy the same hole for several years in succession. The eggs are five in number, ·9 inches long by ·75 inches broad, round and pearly white, laid upon a floor of fish-bones, scales, and remains of coleptera; I have taken two good handfulls out of their nest on several occasions. The tunnel is usually from 20 to 30 inches long, 2½ to 3 inches wide, and the chamber at the end about 5 inches in diameter. I differ from Mr. Gould in considering that the *débris* found in the nest of this species has been 'discharged from the throat and piled up round the young,' from the simple fact *that these bones and scales are found under eggs before the full complement has been laid* for one sitting, secondly

because, in nests placed on the banks of creeks, in which no fish are found, the *débris* consists of wings and legs of coleopterous insects, chiefly *Anophegnathidæ* and *Buprestidæ*, which on account of their horney elytra and covering are by no means suitable for food, and are therefore, I consider, brought in for no other purpose than to keep the eggs off the damp mud in which the birds frequently tunnel."

"This fact was first brought under my notice by my old school-fellow and much lamented friend, the late Mr. F. Mate, perhaps the most talented scholar that ever won honours at Sydney University, but many times since we have found the *debris* of various kinds of insects brought in for a flooring."

The following extract is from the "Bush Wanderings of a Naturalist," by the late Mr. H. Wheelwright :—

"The real Australian *Kingfisher* is smaller than its European namesake, which it resembles much in habits and appearance; it is, however, of a uniform purple-blue colour, and the breast is deep orange. It was a summer migrant to us, and a pair or two might be there seen on every creek: they breed in the hole of a bank, and the eggs exactly resembled those of the British bird."

The description as well as the plate are taken from a Queensland specimen in my collection.

ALCYONE PULCHRA.

ALCYONE PULCHRA.

(RESPLENDENT KINGFISHER).

Alcyone pulchra, ... Gould. P.Z.S. 1846, p. 19.

A. torque pectorali nullo: abdomine rufo: rostro tenuiore, longiore: pileo haud fasciato: hypochondriis pulcherrimè ultramarinis.

Hab. in Australiâ septentrionali.

Above very brilliant ultramarine, a little deeper on the wing-coverts; wing-coverts brownish black, edged with ultramarine; wing-feathers brownish, the inner web very light rufous at the base, the secondaries externally edged with ultramarine; tail deep blue above, black underneath; a small spot in front of the eye light rufous; throat and a patch of feathers along the sides of the neck white tinged with orange; cheeks and ear-coverts brilliant ultramarine; sides of the body also brilliant ultramarine, extending on to the flanks; rest of the under surface of the body deep rich rufous, with a lilac lustre on the abdomen and under tail-coverts; bill deep black; feet orange. Total length 6.5 inches, of bill from front 1.95, from gape 2.2, wing 3.0, tail 1.3, tarsus 0.3, middle toe 0.5, hind toe 0.2.

Hab. Australia, Cape-York Peninsula (*Mus. R. B. Sharpe*); Victoria River and Port Essington, N.W. Australia (*Gould*, *Elsey*).

This species is very distinct from *Alcyone azurea*, with which it has been united by Prince Bonaparte and Mr. G. R. Gray, and may easily be distinguished by the intense ultramarine colouring on the sides of the body. It is also a more slender bird and the colours are brighter.

The description and measurements, and the plate are drawn from a fine specimen in my collection from Cape York. This, as well as another specimen in my cabinet, shews a very narrow blue margin to a few of the breast-feathers; in one they are so distinct as nearly to form a pectoral band.

Additional references.—*Alcyone pulchra*, Gray, Gen. of Birds, I. p. 82 (1846); Gould, Intr. to Birds of Austr. p. 31 (1848); Reich. Vög. Neuholl. p. 278 (1850); *id.* Handb. *Alced.* p. 7 (1851); Cass. Cat. Hale. Phil. Mus. p. 5 (1852); Elsey, P.Z.S. 1857, p. 25; Gould, Handb. Birds of Austr. I. p. 141 (1865); Sharpe, P.Z.S. 1869, p. 356; Gray, Handl. of B. p. 96 (1869).

ALCYONE DIEMENSIS.

(VAN DIEMEN'S LAND KINGFISHER.)

Alcyone diemenensis . . . . . Gould, P. Z. S. 1846, p. 19.
Alcyone azurea . . . . . Ewing. Tasm. Journ. I, p. 56 (1842, *nec Lath.*)

A. torque pectorali nullo : abdomine rufo : rostro tenuiore, breviore : pileo nigro indistincte fasciato.

Hab. in Tasmaniâ.

Above deep blue, a little brighter on the rump, the head having the appearance of being indistinctly banded with dusky black; cheeks, ear-coverts, scapularies, and wing-coverts black washed with blue; wing-feathers blackish, the inner web light rufous from the base, the outer web distinctly washed with blue ; tail blue above, black beneath; a small loral spot, a patch of feathers along the sides of the neck, and the throat white tinged with rufous; the whole of the under surface of the body deep rufous, with a very faint lilac lustre on the flanks; a large patch of feathers on the sides of the upper part of the breast black, with a slight blue lustre; bill black; feet red. Total length 6 inches, of bill from front 1·4, from gape 1·9, wing 3·1, tail 1·35, tarsus 0·3, middle toe 0·55, hind toe 0·25.

Hab. Tasmania *(Gould)*.

Mr. Gould first separated this species from *Alcoyné azurea*, and I have in a recent paper on the genus *Alcyone* kept it distinct. It can, however, be considered little more than a climatic variety of the Australian bird.

In one of his letters my friend Mr E. P. Ramsay writes to me:—

"This species seems to have become very scarce of late years, and is rarely seen even in the most unfrequented parts of Van Diemen's Land. It differs slightly in colour and markings from *A. azurea*, and also in size, being scarcely so large."

The description and measurements are from a Tasmanian skin in my collection.

Additional references.—*Alcyone diemensis*, Gould, Introd. Birds of Austr. p. 31 (1848); Gray, Gen. of Birds, I. p. 82 (c. 1844); Kaup, Fam. *Alced.* p. 18 (1848); Reich. Vög. Neuholl. p. 278 (1850); Cab. & Heine, Mus. Hein, th. II. p. 143 (1860); Gould, Handb. Birds of Austr. I. p. 141 (1865); Sharpe, P. Z. S. 1869, p. 355.

ALCYONE AFFINIS.
ALCYONE LESSONI.

ALCYONE LESSONI.

(LESSON'S KINGFISHER).

Alcyone Lessonii . . . . . Cass. Proc. Phil. Acad. 1850, p. 69.
Ceyx azurea . . . . . Less. Voy. Coq. Zool. I, p. 690 (1826).
Alcyone azurea . . . . . Rosenb. Journ. f. Orn. 1864, p. 118.

A. torque pectorali nullo: abdomine rufo: rostro robustiore: suprà saturate ultramarina.

Hab. in Novâ Guinea et in insulis dictis "Aru."

Above deep rich ultramarine; wing-coverts deep blue-black edged with ultramarine; quills blackish, the inner web very light rufous at the base, the secondaries broadly edged with rich ultramarine; tail deep ultramarine above, black beneath; a minute loral spot rufous; a longitudinal patch of feathers along the sides of the neck white tinged with pale orange; throat whitish tinged with pale rufous; cheeks, sides of the neck, and a large patch of feathers on the sides of the upper part of the breast deep rich ultramarine, extending a little on to the flanks; rest of the under surface of the body deep rufous, with a rich lilac shine upon the flanks; bill jet-black; feet red. Total length 7 inches, of bill from front 1·7, from gape 2·1, wing 2·85, tail 1·2, tarsus 0·3, middle toe 0·5, hind toe 0·25.

Hab. New Guinea (*Lesson*, *Wallace*), Aru Islands (*Wallace*).

Although belonging to the same group of thick-billed Alcyones as *A. affinis*, the present bird is distinct from that species, being altogether of a more rich ultramarine, not so bright as in its ally from Batchian. I have not seen very many specimens of *Alcyone Lessoni*, as it is a very rare bird in collections, but I have examined a large number of *Alcyone affinis* and believe that the two species are entirely distinct, as indeed we might expect from the difference in locality.

I have taken the description from a fine adult bird collected by Mr. Wallace in Aru, and lent to me by him. The figure is taken from a New Guinea bird in my own collection, which I have thought it best to figure, as New Guinea is the typical locality for the present species.

Additional references.—*Alcyone Lessoni*, Cass. Cat. Halc. Phil. Mus. p. 5 (1852); Sclater, Journ. Linn. Soc. 1858, p. 156; Sharpe, P. Z. S. 1869, p. 353. *Alcyone azurea, var. Lessonii*, Gray, P. Z. S. 1859, p. 155 et P. Z. S. 1861, p. 433.

ALCYONE AFFINIS.

(BATCHIAN KINGFISHER).

Alcyone affinis	Gray, P. Z. S. 1860, p. 348.
„ „	Sharpe, P. Z. S. 1869, p. 354.
Alcyone azurea	Schl. Vog. Ned. Ind. pp. 11, 47 pl. 3, (1864).

A. torque pectorali nullo: abdomine rufo: rostro robustiore: supra lætissime ultramarina.

Hab. in insulis "Batchian" et "Gilolo" dictis.

Above brilliant ultramarine, brightest on the back; wing-coverts black washed with ultramarine; quills blackish, the inner web light rufous at the base, the outer web of the secondaries narrowly edged with ultramarine; a very small loral spot faint rufous; throat and a longitudinal patch of feathers along the sides of the neck whitish tinged with orange-rufous, paler on the chin; cheeks, ear-coverts, and a patch of feathers on the sides of the upper part of the breast brilliant ultramarine; under surface of the body rufous, with a rich lilac lustre on the flanks; feet red; bill brownish black, towards the tip whitish. Total length 6·7 inches, of bill from front 1·6, from gape 2·0, wing 3·85, tail 1·2, tarsus 0·3, middle toe 0·5, hind toe 0·25.

Hab. Batchian, Gilolo (*Wallace*).

This bird is easily distinguished from its congener *Alcyone Lessoni*, by its slightly smaller size and by the brighter colour of the blue on the upper surface. The bill is remarkably stout, as will be seen on reference to the plate. Several examples are in the Leiden Museum from Batchian and Gilolo, and the description and figures are taken from a specimen from the latter island in Mr. A. R. Wallace's collection.

ALCYONE PUSILLA.

ALCYONE PUSILLA.

(LITTLE BLUE KINGFISHER.)

Ceyx pusilla, ... Temm. Pl. Col. 595 (1836).
Alcyone pusilla . . . . Gould, Birds of Austr. II, pl. 36 (1848).
Alcedo pusilla, ... Schl. Mus. Pays Bas, *Alced.* p. 18 (1863).
Nu-réa-bin-mo, of the natives of the Coburg peninsula (Gould).

A. torque pectorali nullâ: abdomine albo.

Hab. in Australiâ septentrionali et in sub-regione Austro-Malayanâ.

Above rich ultramarine, having a greenish tinge in some lights on the head, cheeks and wing coverts; quills blackish, the inner web lighter at the base, the outer web distinctly washed with greenish-blue, especially on the secondaries; tail blue above, black beneath; a loral spot and a patch of feathers along the sides of the neck, white, the latter slightly tinged with orange; entire under-surface white, with a greenish lustre on the breast in some lights; shoulders, sides of the breast and flanks, rich ultramarine; bill and feet greenish-grey; irides dark blackish brown. Total length 4.8 inches, of bill from front 1.15, from gape 1.4, wing 2.0, tail 0.85, tarsus 0.25, middle toe 0.45, hind toe 0.2.

Hab. Rockingham Bay (*Ramsay*), Port Essington (*Gould*), New Guinea (*Müller*), Aru Islands (*Wallace*), Gilolo (*Wallace*).

This little species of Kingfisher is confined to the northern parts of Australia, and the islands of the Austro-Malayan sub-region and seems to be everywhere scarce. The original specimens were sent from New Guinea by the dutch traveller von Müller, and others were afterwards discovered in northern Australia. Mr. Gould has published *(l.c.)* the following note respecting it.

"This lovely little Kingfisher is a native of the northern portions of Australia; the specimens in my collection were all procured at Port Essington, where it is a rare bird; and from its always inhabiting the densest mangroves, is not only seldom seen, but is extremely difficult to procure; in general habits and manners it very much resembles the *Alcyone azurea*, but its flight is somewhat more shrill and piping and its flight more unsteady. Specimens of this species from New Guinea, which I have had opportunities of

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Additional references.—*Ceyx pusilla*, Müll. Verh. Ethn. p. 22 (1839), Gray, P.Z.S. 1858, p. 172, Finsch, Neu Guinea, p. 16 (1865). *Alcyone pusilla*, Reich. Handb. *Alced.* p. 7, t. 398, fig. 3068-69 (1851), Cass. Cat. Halc. Phil. Mus. p. 5 (1852), Macgill. Voy. Rattl. II, p. 356 (1852), Sclater, Proc. Linn. Soc 1858, p. 172, Rosenb. Journ. f. Orn. 1864, p. 118, Gould, Handb. Birds of Austr. I. p. 142 (1865), Ramsay, P.Z.S. 1868, p. 383. *Alcedo pusilla*, Schl. Vog. Ned. Ind. *Alced.* p.p. 12, 48, pl. 3 (1864).

examining in the noble collection at Leyden, present no difference whatever from those found in Australia. The food of the *Alcyone pusilla* consists of small fish, which are taken precisely after the manner of the common Kingfisher of our own island. The sexes are alike in size and colour."

I am indebted to my friend Mr. E. P. Ramsay, C.M.Z.S., of Dobroyde, Sydney, N.S.W. for the following additional particulars concerning this pretty little bird:—

"I have never yet had an opportunity of observing this minature Kingfisher in its natural state, but I hope that time is not far distant. Edward Spalding procured the only specimen I have seen (with some others which were finally lost) in the dense belts of mangroves at Rockingham Bay, where, he says, they are not only very rare but extremely difficult to procure. Their flight is quick, arrow-like and direct, their note a shrill piping cry. The measurements of a female in the Dobroyde collection are as follows:—

Total length from tip of bill to tip of tail	4.4 inches.
Bill from tip to forehead	1.05 ,,
,, to angle of mouth	1.2 ,,
,, height of, at base	0.25 ,,
Wing, from flexure	2.05 ,,
Tail, from vent	1.0 ,,
Tarsus	0.3 ,,
Longest toe 0.4, its claw 0.2, total length	0.6 ,,
Hind toe 0.2, its claw 0.1, ,, ,, ...	0.3 ,,

"Mr. Gould's remarks on the colour and plumage of this species do not quite agree with the specimen I have before me, but doubtless they refer to adult males, while my specimen is marked a female. The bill is black, at the extreme tip horn-white, legs and feet light flesh-colour, claws horn-grey, iris dark brown."

In addition to Mr. Ramsay's bird being a female, which may account for some slight differences in the colour between his specimen and that described by Mr. Gould, the fact of its having white at the tip of its beak shows clearly that it is not quite adult, this being a never-failing mark of a young *Alcyone*, and the differences, which seem nowhere more remarkable than in the colour of the feet, may thus be further accounted for.

Mr. Wallace has with his usual kindness furnished me with a short note on the habits of the present species as observed by him in his travels in the Malay Archipelago. "This minute Kingfisher frequents the banks of small streams in the deep forest, feeding on small fish and crustacea. It appears to be scarce, or perhaps from its small size and retiring habits, is less easily seen than its more conspicuous allies."

The description and measurements are taken from a specimen procured by Mr. Wallace in Gilolo and lent to me by him. The figure represents a beautiful old bird in my collection, undoubtedly one of the finest ever brought to Europe, but I regret to say the exact locality where it was obtained is unknown.

ALCYONE CYANIPECTUS.

ALCYONE CYANOPECTUS.

(BLUE-GIRT KINGFISHER.)

Ceyx cyanopectus, ...	Lafr. Rev. Zool. 1840, p. 33.
„ „	Gray, Gen. of Birds, App. p. 5 (1848).
Alcyone cyanopectus, ...	Jard. Contr. to Orn. 1850, p. 82.
Alcyone cyanipectus, ...	Bonap. Consp. Gen. Av. I, p. 158 (1850).
„ „ , ...	Reich. Handb. *Alced.* p. 7, t.cccxcvi, fig. 3060 (1851).
„ „ , ...	Bonap. Consp. Vol. Anis. p. 10 (1854).
„ „ , ...	Hartl. Journ. f. Orn. 1854, p. lxiv.
Alcyone cincta, ...	Jard. Contr. to Orn. 1850, plate only.
Alcedo cyanipectus, ...	Schl. Mus. Pays Bas, *Alced.* p. 18 (1863).

A. torque pectorali latâ lazulinâ: mandibulâ nigricante, maxillâ aurantiâ.

Hab. in insulis Philippinis.

Head deep bluish black, irregularly banded with bright blue, more thickly on the nape; the whole of the back rich shining cobalt; scapularies and wing-coverts black broadly washed with dark blue, the latter also spotted with bright cobalt; wing-feathers brownish black, the secondaries narrowly edged with indigo; tail black, washed with indigo; cheeks indigo, spotted with cobalt; a spot in front of the eye, a patch of feathers at the side of the neck, throat and upper part of the breast, whitish tinged with pale sienna; a band across the upper part of the breast and the flanks, deep indigo tinged with brighter blue on the latter; abdomen and under wing-coverts rufous; bill brownish-black, the lower mandible tinged with orange. Total length 5 inches, of bill from front 1.4, from gape 1.7, wing 2.5, tail 0.7, tarsus 0.3, middle toe 0.3, hind toe 0.2.

Hab. Philippine Islands (*mus. T. C. Eyton*).

The present species was described by the late Baron de La Fresnaye as a *Ceyx* in 1840. Ten years afterwards a specimen was received by Mr. Eyton from the Philippines, and was sent to Sir William Jardine for description in the "Contributions to Ornithology." The

latter gentleman considered it to be new to science, and proposed to call it *Alcyone cincta*, and this name was printed on the plate, before it was discovered that Mr. Eyton's bird was identical with La Fresnaye's species.

The members of the genera *Alcyone* and *Ceyx* differ much in their habits. The species of *Alcyone* seem to be almost entirely piscivorous and more allied to *Alcedo*, while the *Ceyces* are almost wholly insectivorous and seldom feed on fish. I believe that Mr. Gould's new *Ceyx philippinensis* will be found really to belong to the genus *Ceyx*, although I have lately seen two specimens, one in the British Museum, and the other from Count Turati's collection, which have the bill more elongated and the gonys less distinctly ascending than in the type specimen, which is accurately figured in my plate of the species.

At present nothing is known of the habits of *Alcyone cyanopectus*, nor has its precise locality yet been ascertained. It will I think be found in the more southern islands of the Philippine group.

I have taken my description from Mr. Eyton's specimen, the same which Sir William Jardine described and the figure is drawn from a fine bird in the Leiden Museum.

CERYLE GUTTATA.

CERYLE GUTTATA.

(HIMALAYAN SPOTTED KINGFISHER.)

Alcedo guttatus, ... Vigors, P.Z.S. 1830, p. 22.
Megaceryle guttata, ... Bonap. Consp. Vol. Anis. p. 10 (1854).

C. sexibus simillibus: dorso fusco, nigro et albo transfasciato: minor.

Hab. in plagâ Himalayanâ.

Head crested, black varied with white; upper surface of the body greyish-black banded with white; quills and tail black, spotted and banded with white; under-parts white, the upper part of the breast and flanks irregularly banded and spotted with grey; bill blackish horn-colour; irides dark brown; legs brownish black. Total length 12 inches, of bill from front 2.4, from gape 3.5, wing 7.0, tail 4.2, tarsus 0.3, middle toe 0.95, hind toe 0.2.

Hab. Himalaya *(Jerdon.)*

Having given a full detailed description of *Ceryle lugubris*, which *C. guttata* exactly resembles, I have contented myself with the above very short diagnosis of the present species; it will, however, be sufficient to distinguish it from its congener. Its geographical area seems to be confined to the Eastern Himalayan region. Mr. Hodgson obtained it in Nepal, and Colonel Tytler remarks *(l.c.)*, that he "saw very few on the Tonse and Jumna rivers, and none at any elevation beyond the height of the rivers."—Dr. Stolickza *(l.c.)* also states that it "occurs on the small streams beyond Rampoor, beyond Gaora and Serahan, up to an elevation of 7,000 feet; in Kashmir it is very common."

Mr. Jerdon remarks that this species "has only been found in the Himalayas, frequenting wooded streams and rivers, and living exclusively on fish. It watches from a fixed perch, and darts down generally obliquely on its prey, not hovering, like its congener of the plains. I saw it near Dargeeling, up to 5,000 feet of elevation."

Additional references.—*Alcedo guttata*, Gould, Cent. Himal. Birds, pl. 5 (1832). *Ceryle guttata*, Gray, Gen. of Birds, I, p. 82 (c. 1844), id. Cat. Fiss. Brit. Mus. p. 60 (1848), Blyth, Cat. Birds Mus. As. Soc. Beng. p. 48 (1849), Reich. Handb. *Alced.* p. 21, t. ccccix, fig. 3104 (1851), Cass. Cat. Halc. Phil. Mus. p. 6 (1852), Horsf. and Moore, Cat. Birds Mus. E. I. Co. I, p. 132 (1854), Gray, Cat. Mamm. and Birds of Nepal, p. 57 (1863), Beavan, Ibis, 1865, p. 408, Tytler, Ibis, 1868, p. 196, Stolickza, Journ. As. Soc. Beng. 1868, p. 19. *Megaceryle guttata*, Cab. and Heine, Mus. Hein. th. II, p. 149 (1860).

I am indebted for the following note to the kindness of my friend Captain R. C. Beavan:—

"I have frequently observed this fine Kingfisher in the valley of the Great Rungeet River near Dargeeling, and procured a specimen there in 1862. It also occurs on the Rumàam and Rungeet rivers, but is nowhere common; it also extends down the Teesta as far as Julpigoorie where I am nearly sure I recollect seeing it in 1859."

The description, measurements and figure are taken from a beautifully preserved skin procurred in Nynee Tal, and given to me by my friend Captain C. H. T. Marshall. On this specimen I observe a slight tinge of tawny on the sides of the neck, while another skin in my collection has the whole of the under-parts distinctly washed with this colour.

CERYLE LUGUBRIS.

(JAPANESE SPOTTED KINGFISHER.)

Alcedo lugubris	Temm. Pl. Col. 548 (1834).
„ „ . . , .	Schl. Mus. Pays Bas, *Alced.* p. 2 (1863).
Alcedo (Ceryle) lugubris . . .	Temm. and Schl. Faun. Jap. Av. p. 77, pl. 38 B (1850).
Ceryle lugubris	Bonap. Consp. Gen. I. p. 160 (1850).
„ „	Reich. Handb. *Alced.* p. 22, t. ccccviii, fig. 3099-3100 (1851).
„ „	Swinh. P.Z.S. 1863, p. 333.
Megaceryle lugubris	Bonap. Consp. Vol. Anis. p. 10 (1854).
„ „	Cab. and Heine, Mus. Hein. th. II. p. 149 (1850).

C. sexibus simillibus: dorso fusco, nigro et albo transfasciato: major: rostro magis compresso.

Hab. in insulis Japonicis.

Head with a largely-developed crest, the feathers of which for the most part are black, spotted and waved with white, a few (especially in the centre of the crest) pure white, and a few white with only an occasional black spot; lores, cheeks, eye-brows and ear-coverts black variegated with white; a broad band of feathers commencing at the base of the lower mandible and encircling the neck, pure white, below this a narrow line of feathers becoming broader as it approaches the side of the neck, white variegated with black and tinged with tawny; back and scapularies fuscous-grey banded and spotted with white, a little paler on the lower part of the back; quills and tail dusky black, spotted and banded with white, especially on the inner web; under-surface of the body white, the upper part of the breast and flanks with more or less distinct black bars; under wing- and tail-coverts pure white with a black spot here and there; bill dark horn colour; feet olive-brown. Total length 16 inches, of bill from front 2.3, from gape 3.0, wing 7.6, tail 4.7, tarsus 0.3, middle toe 0.9, hind toe 0.2.

Hab. Japan *(Siebold)*, Nagasaki *(Whitely)*.

It is in deference to the high authority of Professor Schlegel and his predecessor Prof. Temminck, that I am induced to consider the present bird distinct from the Himalayan species. The only difference adduced by Professor Schlegel between them is the slightly larger size and more compressed beak of the Japanese bird, and I leave it to the consideration of Ornithologists whether these characters are sufficient to indicate anything more than

a larger race of *Ceryle guttata*. As far as our knowledge of the two species extends we have only practical evidence of the one being met with in the Himalayas, and of the other being confined to Japan, no specimens of a large spotted Kingfisher having been procured in the intervening country; but Temminck distinctly states that Chinese writers mention it as an inhabitant of Northern China, and is therefore possible that a form may yet be found in the mountains of this part of the continent, which may connect the two races. I have thought it best, however, to give a full description of the Japanese bird, but have not given a figure of it, inasmuch as in colour and markings it exactly resembles the Himalayan Spotted Kingfisher. The following is a comparison of the measurements of a Japanese specimen with two Himalayan birds now lying before me.

1.	*Ceryle lugubris*	.	.	Nagasaki (*Whitely*).	Long. tot.	16.	inches, al.	7.6,	rostr.	2.3.
2.	*Ceryle guttata*	.	.	Himalaya (*mus. R. B. S.*).	„	„	14.	„	„	7.0,	„	2.3.
3.	„	„	.	.	„	„	„	„	14.5	„	„	7.1,	„	2.3.

I could give a longer series of comparative measurements, but those brought forward are sufficient to show that the Japanese bird is a little larger, and this, with the addition of the slightly more compressed bill, is really the only difference.

The following observations, taken from Prof. Temminck's original description in the "Planches Coloriées" is all that we know respecting the habits of the present species:—

"This new species was brought by M. van Siebold from Japan, where it is very rare. The native Japanese names for it are *Samo-dori* (Spotted Bird), *Kabuto-dori* (Crested Bird), *Kawara-dori* (River Bird), and in Chinese *Kon-fu-tsjo* (Pretty female of a bird), or *Kwa-van-tsjo* (Little spotted flower of a bird). It is found on the borders of rivers and torrents, where it feeds on fishes and worms; it appears to be spread over the three large islands in Japan. M. Siebold observed it near Nagasaki and Jedo. It is mentioned in Chinese writings as inhabiting the north of China and the adjacent island of Corea. The Japanese value it as an object of curiosity and keep it in confinement."

I have only met with one specimen of *Ceryle lugubris* in England. This was in Mr. Gould's collection, and with his usual courtesy was lent to me by that gentleman for the use of the present work. It was brought from Nagasaki by Mr. Whitely during his recent expedition to Japan. The description and measurements are from this specimen.

CERYLE RUDIS.

CERYLE RUDIS.

(PIED KINGFISHER).

Martin-pêcheur noir et blanc de Senegal . .	Buff. Pl. Enl. 62.
Martin-pêchear huppè du Cap de Bon Esperance .	Buff. Pl. Enl. 716.
Alcedo rudis	Linn. Syst. Nat. I, p. 181 (1766).
Ceryle rudis	Boie, Isis, 1828, p. 316.
Ispida rudis	Jerd. Madr. Journ. 1840, p. 232.
Ceryle varia	Strickl. Ann. Nat. Hist. VI, p. 418 (1841).
Ispida bitorquata	Swains. Classif. of B. p. 336 (1837).
Ispida bicincta	Swains. B. of W. Afr. II, p. 95 (1837).
Ceryle bicincta	Reich. Handb. *Alced.* p. 20 t. ccccviii, fig. 3098 (1851).
Ceryle leucomelanura	Reich. Handb. *Alced.* p. 21, t. ccccix, fig. 3488 (1851).

C. sexibus dissimilibus : dorso nigro albo variegato.

Hab. in totâ regione Æthiopicâ, in regione Indicâ et in parte meridionali regionis Palæarcticæ.

Additional references.—*Alcedo rudis*, Gm. Syst. Nat. I, p. 247 (1788); Lath. Ind. Orn. I, p. 247 (1790); Bonn. et Vieill. Encl. Meth. I, p. 454 (1823); Less. Traité d'Orn. p. 242 (1831); Frankl. P. Z. S. 1831, p. 116; Sykes, P. Z. S. 1832, p. 84; id. P. Z. S. 1835, p. 62; Gould, Birds of Eur. pl. 62 (1837); Macl. P. Z. S. 1839, p. 156; Pears. Journ. As. Soc. Beng. 1841, p. 635; Ewer, P. Z. S. 1842, p. 92; Des Murs, Voy. en Abyss. Zool. p. 80 (1848); Schl. Mus. Pays Bas, *Alced.* p. 2 (1863). *Ceryle rudis*, Boie, Isis, 1828, p. 316; Keys. and Blas. Wirb. Eur. p. xxxv (1840); Gray, Gen. of Birds, I, p. 84 (1845); Ferr. Voy. en Abyss. Zool. III, p. 248 (1847); Gray, Cat. Fiss. Brit. Mus. p. 60 (1848); Bonap. Consp. Gen. Av. I, p. 159 (1850); Strickl. P. Z. S. 1850, p. 216; Reich. Handb. *Alced.* p. 20, t. ccccviii, fig. 3097 (1851); Cass. Cat. Halc. Phil. Mus. p. 4 (1852); Brehm, Journ. f. Orn. 1853, pp. 97, 454; Hartl. Journ. f. Orn. 1854, pp. 5, 155; Bonap. Consp. Vol. Anis. p. 10 (1854); Licht. Nomencl. Av. p. 67 (1854); Moore, P. Z. S. 1854, p. 269; Müll. Journ. f. Orn. 1855, p. 9; Hartl. Journ. f. Orn. 1855, p. 360; Strickl. P. Z. S. 1856, p. 216; Hartl. Orn. Westafr. p. 37 (1857); Adams, P. Z. S. 1858, p. 474; id. P. Z. S. 1859, p. 174; Tristr. Ibis, 1859, p. 27; Taylor, Ibis, 1859, p. 47; Gurney, Ibis, 1859, p. 245; Swinh. Ibis, 1860, p. 49; Cab. & Heine, Mus. Hein. th. II, p. 148 (1860); Heine, Journ. f. Orn. 1860, p. 187; Hartl. Journ. f. Orn. 1861, p. 105; Swinh. Ibis, 1861, p. 31; Irby, Ibis, 1861, p. 228; Jerd. Birds of Ind. I, p. 232 (1862); Allen, Ibis, 1862, p. 361; Swinh. P. Z. S. 1863, p. 269; Gray, Cat. Mamm. and Birds of Nep. p. 24 (1863); Bree, Birds of Eur. III, p. 166 (1864); Adams, Ibis, 1864, p. 15; Allen, Ibis, 1864, p. 237; Kirk, Ibis, 1864, p. 325; Beav. P. Z. S. 1865, p. 692; id. Ibis, 1865, p. 408; Tristr. Ibis, 1866, pp. 84, 86; Swinh. Ibis, 1866, p. 292; Blyth, Ibis, 1866, p. 349; Taylor, Ibis, 1867, p. 56; Swinh. Ibis, 1867, pp. 399, 408; Degl. et Gerbe, Orn. Eur. I, p. 176 (1867); Stolickza, Journ. As. Soc. Beng. 1868, p. 19. *Ceryle varia*, Strickl. P. Z. S. 1842, p. 167; Phillips, P. Z. S. 1857, p. 89; Gould, P. Z. S. 1859, p. 150; Cab. & Heine, Mus. Hein. th. II, p. 150 (1860).

Adult Male. Head crested, black, striped narrowly with white, plainer on the cheeks; a broad superciliary line extending downwards on to the sides of the neck, white; the rest of the body black varied with white, the latter colour predominating on the lower part of the back and rump; quills black, white at the base, the secondaries barred with white, the primaries externally white at the base, forming a large white patch; tail feathers black, spotted and tipped with white; under surface of the body pure white with two black bands across the breast; a few black marks on the flanks, and sometimes a few spots on the throat; bill black; feet brown; eye dark-brown (*Jerdon*), black (*Ayres*).

Adult Female. Similar to the adult male, but has only one band across the breast.

Young. Similar to the adults, but the plumage above almost entirely black, and the breast marked with grey edgings to the feathers, giving a barred appearance, the band across the breast not complete.

Hab. South Africa, (*Layard*), Knysna (*Andersson*), Great Namaqua Land (*Andersson*), Transvaal (*Ayres*), Natal (*Ayres*), Caffraria (*Wahlberg*), Lake N'gami (*Chapman*), Zambesi (*Kirk*), Galungo, Loanda (*Sala*), Angola (*Monteiro*), Gaboon Camma and Ogobai Rivers (*Du Chaillu*), Cameroons (*mus. R. B. S.*), Bonny River (*Jardine*), Fernando Po (*Fraser*), New Calabar (*Fraser*), Fantee (*Sharpe*), Gold Coast (*Pel*, *Sintenis*), Sierra Leone (*Afzel.*), Bissao (*Verreaux*), River Gambia (*mus*, *R. B. S.*), Senegambia (*mus*, *Hein.*), Bogos Country (*Heuglin*), Red Sea district (*Heuglin*), Abyssinia (*Rüppell*), Senaar (*Brehm*), Kordofan (*Petherick*), Egypt (*Shelley*, *Taylor*), Algeria (*Loche*), Sicily (*Malherbe*), Greek Islands (*von der Mühle*, *Lindermayer*), Cyclades (*Erhard*), Asia Minor (*mus*, *J. Gould*), Smyrna (*Strickland*), Sea of Marmora (*Demidoff*), Palestine (*Tristram*), Syria (*Sperling*), Persia (*Edwards*), Mesopotamia (*Jones*), all over India, Burmah and Malayana (*Jerdon*), Siam (*Schomburgk*), Southern China as far north as Shanghai (*Swinhoe*), Hainan (*Swinhoe*).

[To Mr. Dresser I am again indebted for allowing me to draw from the MS. of the "Birds of Europe" in the preparation of the following article. Any additional information will be gladly received by us for insertion in the above-mentioned work. R. B S.]

Considerable discussion has arisen amongst Naturalists as to the positive identity of the female of the Pied Kingfisher—whether the single band across the breast is really the distinguishing character of the latter sex, as some male specimens carefully sexed have been found with only one pectoral band. To me, however, the whole matter admits of an easy solution, if attention is given to the progressive stages of plumage between the young and old birds. I have now a very large series of this species before me, and I believe that the *very old* male has two bands and the *old* female only one band across the breast. The young males exactly resemble the old female, but as they get older the second black band is *gradually* assumed, and it is evident that it is a long time before any appearance of the second band is to be seen; an additional sign of the very old bird is also to be observed in the black spots on the throat just as the grey edgings to the feathers of the breast are a sign of a young one.

No difference of any specific value can be found between the Pied Kingfishers of Asia and Africa. Mr. Gould possesses an immense specimen from Smyrna, which, however, scarcely exceeds in length of wing an Indian example, and is, therefore, probably only a very fine bird of the ordinary species.

The Pied Kingfisher is said to occur in Spain, but not apparently on any good authority; Malherbe records it from Sicily, and Loche states that it is only a rare and occasional visitor in Algeria.

Lindermayer, in his "Vögel Griechenlands," observes:—

"In my former work I did not include this Kingfisher, and stated respecting it that it

does not occur either on the mainland of Rumelia nor in the Peloponnesus, but possibly on the islands. This view has been fully confirmed, as Von der Mühle only obtained it once on the island of Thermia, and remarks at the same time that he could never find it on the mainland of the Peloponnesus. It was, however, well known to the mariners. I have once obtained this Kingfisher from the island of Mykove. Erhardt includes it as a summer bird at the Cyclades. I could ascertain nothing about its habits, nidification, or time of emigration."

Demidoff (Voy. Russie Merid. p. 207) says:—

"This species has not yet been observed on the northern coast of the Black Sea, and is confined to the shores of the Sea of Marmora."

Dr. Tristram, in his paper on the Ornithology of Palestine says, that "*Ceryle rudis* is the commonest and most conspicuous species in the country. We first saw it on the sea-shore in winter, when, in the months of November and December, immense numbers resort to the sea-coast. They were particularly abundant about Tyre and Sidon and all the way to Mount Carmel, frequenting the shore, and hovering by dozens over the sea about a hundred yards from land, and occasionally perching with loud cries on an outlying rock. At this time they were very wary, and cost us much trouble to procure. During the most stormy gales of winter they continued, regardless of the weather, to hover over the breakers, ever and anon dashing from into the surf and apparently diving to the bottom for their prey. Their flight and actions reminded us very much of the Kestril. After rising with a somewhat jerking flight, they would poise themselves for several minutes with a gentle quiver of the wing, and then suddenly drop perpendicularly, beak foremost, for a header, or else glide swiftly onwards to take up another aërial post of observation. They are at all times of the year gregarious in small bands; a few breed near the Jordan, in the banks of the Wady Kelt, but the great breeding place which we discovered was on the plain of Gennesaret, in the banks of the Ain Mudawarah. Here there was a colony of about thirty pairs, only a small proportion, however, of the birds of this species which feed on the teeming myriads of fishes in the hallowed lake. They selected a different part of the bank, and built in a different position from *Halcyon smyrnensis*. Shortly before its entrance into the lake the Mudawarah forms a hollow secluded pool, with steep banks of mud about twenty feet high above the water, which may have a depth of ten or twelve feet. The sides of this little amphitheatre were perforated all around by the holes of the Great Kingfisher, but all of them close to the water edge, about four inches above it. Here on the 28th of April, Mr. Bartlett took two nests of six and four eggs respectively. I revisited the locality on the 21st and 22nd of May, and found great numbers of young birds fledged and able to fish for themselves, while some nests contained from four to six young; but I still secured five nests with fresh eggs in each. The only way of securing them was to strip and swim to the bank, while an Arab threw down a rope from above which I fastened round my waist while he held the other end; and thus suspended in the pleasant tepid bath, I dug away with the mattock let down to me till the eggs were reached. The passages were about three feet and a quarter in length, and the chamber at the end was simply scooped at one end of the passage, not turned at a sharp angle, nor double, like that of the Bee Eater. In one instance I had dug long and laboriously when out dashed a great rat instead of a Kingfisher, leaving her six naked young to their fate. In no instance were there any bones with the eggs, though, when there were young, there was a festering heap of bones and filth. But there was always an abundantly-heaped nest of grass and weeds. In one nest, which had been visited and robbed by Mr. Bartlett, there was a family of three unfledged young; so that the bird must have laid again almost immediately in the same digging. The whole colony sat about on the oleanders, or passed and repassed incessantly during my operations, screaming and shrieking at the intruder most vociferously. The eggs of this species vary in shape more than those of any other Kingfisher with which I am acquainted. Though generally almost spherical, those of two nests we captured were decidedly elongated; in

one case much more so than in the other, and the peculiarity was common to the whole sitting in each case. Some confusion has arisen in the nomenclature of this bird from Swanson, in his "Birds of West Africa" (vol. ii. p. 95), having described the male bird as distinct, under the name of *Ispida bicincta*. The fact is, that the adult male always has the *second* narrow bar of black across the chest. Degland, on the contrary, attributes this second belt to the female. I preserved twenty-one specimens, and many were collected by others of the party. In all the sex was carefully noted, and the rule held good of the male having a second band, which was wanting in the female and the young bird. The young, before its first moult, has many of the feathers on the throat and breast, both above and below the band, delicately tipped with a slaty-black crescent-shaped mark. The range of *Ceryle rudis* is most extensive, from Western Africa and the Cape of Good Hope to the furthest parts of China and Japan. It is evidently the bird intended by Russell, in his "Natural History of Aleppo," under the name of *Alcedo alcyon*, *var.* γ, and was first described by Hasselquist."

The Rev. E. M. Young has given us the following notes on the present species:—

"This bird is very common both in Lower and Upper Egypt, remaining throughout the year and breeding about April 1st. It was curious to see how tenaciously it would keep to a particular perch, generally a dry stick or a telegraph wire if such were at hand. When in search of food it might frequently be seen poised in the air over stagnant pools till it suddenly dropped on some fish, diving completely beneath the surface. The fluttering of its wings, as it thus poised itself, was extremely pretty. The note is a shrill twitter, not often heard; the colour of the eggs is white. I often pursued this bird along the river bank as it flew in front of me, continually perching but never allowing me to get within shot; till at last, seemingly tired of the chase, it would fall an easy prey to the gun."

The following observations are published by Dr. von Heuglin (Orn. N. O. Africa's, p. 185):—

"*C. rudis* is very common in N. E Africa; we have also met with it on the Egyptian coast of the Mediterranean and on the coast of the Red Sea, but it is scarcely a regular inhabitant of the coast. On the other hand it is not wanting in the lagoons of the Delta, on canals where standing water is, on flooded meadows and fields, as also on the true Nile and its tributaries, south-westward to Djur and Kosanga. In Abyssinia it is only found in the warm low countries; on the upper Nile it appeared to me to be rarer than in Nubia and Egypt. Here it is a resident, although in summer and autumn it often bands in families and small companies and leaves its former residence. These pilgrimages may be caused by the rising of the Nile and the discolouring of the stream. It lives in pairs, is sociable, and —except during the breeding-season—more friendly with members of its own species than other Kingfishers, and often several pairs dwell in the same neighbourhood. It sits and watches along the shore on overhanging branches, on roots, walls, brickets, rocks, and even on the ground, but seldom pounces from the latter on its prey. From time to time it takes a flight over shallow clear water, also right across the river or from one island to another, sometimes very low, generally however several fathoms above the surface. Its flight is not very swift but straight, and steadied by quick fluttering motions of the wing, not rushing like that of *Alcedo ispida*, and it rises and falls according to will and with great agility. One often sees it, after taking a start by several quick flaps of the wings and gliding on for a distance, suddenly with one quick movement alter the direction of the flight and suddenly stop and hover. When hovering the bill is held straight down, and the hind part of the body and tail also rather lowered. Directly it catches sight of its scaly prey it turns up, lays its feathers close to the body, and drops like a stone into the water, remaining often over ten seconds below the surface. It seldom misses its mark, and devours the fish it has captured either on the wing or at one of its resting-places. The voice is a shrill whistle, at the same time chirpey, or at times snickery. During the pairing-time the males often fight on the wing, and roll together, calling loudly, nearly to the surface of the water. In Egpyt the breeding-season is our spring; according to Adams as early as December. The

nest, consisting of a small heap of clean dry grass, is placed in a horizontal hole about arm's depth in a steep bank, and contains four to six pure white roundish eggs, the shell of which is rather rough compared with that of *Alcedo ispida*. Often several nest-holes are close together. * * The plumage of the young much resembles that of the adult. * * There is scarcely any bird on the Nile tamer than the Black-and-White Kingfisher."

For the following note I am indebted to the kindness of my friend Mr. J. J. Monteiro:—

"I have observed this Kingfisher frequently on all that part of the West Coast of Africa that I am acquainted with, namely, from Loango to Little Fish Bay. They are to be seen in numbers on every river, lake, or marsh, whether salt or fresh. Their usual habit is to keep steadily in the air in one spot, five or six feet above the surface of the water, by a heavy flapping of the wings, with their beak hanging down, and now and then dropping like a stone to capture the small fish upon which they feed; this they fly off with to a twig or branch to swallow, and rise to hover again as before. They are very noisy, uttering a loud trilling note or screech. The natives capture quantities of small fish by driving a row of sticks across the shallow rivers and lagoons to support a dam of twigs and rushes, leaving openings at intervals in which are placed baskets or traps to catch the fish as they pass out. These Kingfishers are so abundant that I have often seen them standing one on each stick, stretching in a long line across the lagoon, their showy plumage brightly reflected on the still surface of the placid waters, forming a very striking and pretty sight. They are very tame, taking no notice of people passing by quite close to them; are very hard to kill, requiring a good and well-directed charge of shot to bring them down even at a comparatively short distance."

Mr. Thomas Ayres, speaking of this bird in South-Eastern Africa, states:—

"Eye black; feeds entirely on fish; frequents the lakes and rivers near the coast; not found in the interior. This bird hovers over the water before darting down, and if not successful flies on further and hovers again; having caught a fish, it flies to a bough or post to swallow it."

Dr. Jerdon, in his "Birds of India," writes as follows:—

"Mr. Strickland separated the Indian bird from *C. rudis*, stating that it had more white on the upper parts; but it is not generally allowed to be distinct. Indeed his *C. varia* appears to have been founded on a newly-moulted specimen, as contrasted with one having worn and abraded plumage. The Spotted Kingfisher is found over all India, Burmah, and Malayana; also Western Asia, Africa, and the South of Europe occasionally. It is very common and abundant on the banks of rivers, back waters, and canals; also on the edges of tanks, and even of pools and ditches by the roadside. Unlike the other Kingfishers, which watch for their prey from a fixed station and then dart down obliquely on it, this one searches for its prey on the wing, every now and then hovering over a piece of water, and, on spying a fish, darting down perpendicularly on it, and rarely failing in its aim. Now and then during its descent it is baulked, and turns off from its swoop; but I never saw one plunge into the water and turn off from its swoop. I cannot say that I have observed it stay so long under water as Pearson would imply when he states that 'it plunges down dead as a stone into the water, and remains below it so long that the ripple over the surface clears away some time before it comes up again.' Sundevall notices its holding its tail erect when sitting. It makes its nest in holes in the banks of rivers."

Mr. R Swinhoe (*l.c.*), who met with this Kingfisher in Amoy, says that it is "very common on the river, where it is to be found at all seasons; poises on the wing at a height above the water, and drops suddenly down to catch its prey. I have, however, seen it strike obliquely when flying close to the surface of the water."

The description and figure of the adult bird are taken from a fine specimen in my collection from Bengal, that of the young bird from a specimen obtained in West Africa by Heer Sala.

CERYLE MAXIMA.

(GREAT AFRICAN KINGFISHER.)

Alcedo maxima . .	Pall. Spic. Zool. fasc. IV, p. 14 (1769).
Ceryle maxima . .	Gray, Gen. of Birds, I, p. 82 (c. 1844).
Megaceryle maxima .	Reich. Handb. *Alced.* p. 22, t. ccccxix, fig. 3101-2 (1852)
Ichthynomus maximus .	Cab. and Heine, Mus. Hein. th. II, p. 150 (1860).
Ispida gigantea .	Swains. Classif. of Birds, II, p. 336 (1837).
Megaceryle gigantea .	Reich. Handb. *Alced.* p. 23, t. ccccix, fig. 3103, t. ccccxviii, fig. 3486 (1851).
Ceryle gigantea . .	Hartl. Journ. f. Orn. 1854, p. 5.
Alcedo guttata . .	Bodd. Tabl. des Pl. Enl. p. 42 (1783).
Alcedo afra . . .	Shaw, Gen. Zool. VIII, p. 55 (1812).

Chidolde and *Machengwen* of the natives of the Zambesi Region (*Kirk*).

C. sexibus dissimilibus: dorso schistaceo-nigro albo maculato: subalaribus et subcaudalibus albis, fasciis nigris variegatis: abdomine medio albo: hypochondriis fasciis schistaceo-nigris irregulariter notatis.

Hab. in totâ regione Æthiopicâ.

Adult male. Above slaty-black, darker on the head, which is crested; most of the crest feathers with good-sized white spots upon both webs, towards the nape some of the feathers in very old birds unspotted; back and scapularies clearer slaty-grey, a few shaft-stripes very plainly developed, and all the feathers spotted with white of which spots about five shew, two on each side and one on the apex of the feather; the lower part of the back and upper tail-coverts slaty-grey largely spotted with white, some of the spots being more longitudinal bars; the lesser wing-coverts slaty-grey with a heart-shaped spot of black in the centre of the feather; the rest of the wing-coverts black, edged with slaty-grey and conspicuously spotted with white; quills blackish, the inner web white at the base and broadly barred with white, the outer web especially of the secondaries broadly edged with slaty-grey and spotted with white; tail dark slaty-grey, lighter underneath, spotted and banded with white; a small spot in front of the eye, throat and a line of feathers from the base of the

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Additional references.—*Alcedo maxima*, Gm. Syst. Nat. I, p. 455 (1788), Lath. Ind. Orn. p. 246 (1790). Bon. et Vieill. Enc. Meth. p. 282 (1823), Rüpp. Neue Wirb. p. 69 (1826), Less. Traitè de Orn. p. 242 (1831). *Ceryle maxima*, Gray, Cat. Fiss. Brit. Mus. p, 61 (1848), Bonap. Consp. Gen. Av. I, p. 160 (1850), Cass. Cat. Halc. Phil. Mus. p. 2 (1852), Hartl. Beitr. Orn. Westafr. p. 18 (1852), Licht. Nomencl. Av. p. 67 (1854), Hartl. Journ. f, Orn. 1854, p. 4, et 1855, p. 360, Müll. Journ. f. Orn. 1855, p. 9, Heugl. Sitz. Akad. Wien, 1856, p. 276, Hartl. Orn. Westafr. p. 37 (1857), Gurney, Ibis, 1859, p. 243, Hartl. Journ. f. Orn. 1861, p. 106, Mont. Ibis, 1862, p. 333, Schl. Mus. Pays Bas, *Alced.* p. 3 (1863), Kirk, Ibis, 1864, p. 325, Hartm. Journ. f. Orn. 1864, p. 232, Heugl. Journ. f. Orn. 1864, p. 333, Layard, Birds of S. Afr. p. 66 (1867), Gurney, Ibis, 1868, p. 154, Layard, Ibis, 1869, p. 72, Sharpe, Ibis, 1869, pp. 282, 283, Hartl. and Finsch, Orn. Ostafr. p. 173, Heugl. Orn. Nord-Ost. Afr. p. 186 (1869), Ayres, Ibis, 1869, p. 290. *Megaceryle maxima*, Bonap. Consp. Vol. Anis. p. 10 (1854). *Ispida gigantea*, Swains. Birds of W. Afr. II. p. 93, pl. 11 (1837). *Ceryle gigantea*, Hartl. Orn. Westafr. p. 38 (1857), Heugl. Journ. f. Orn. 1862, p. 288.

lower mandible down the sides of the neck, pure white, the latter varied with longitudinal black marks; cheeks and a line of feathers below the last-mentioned line of white and black feathers, black, the former narrowly, and the latter broadly varied with white; lower part of the throat and chest rich rufous, the sides varied with slaty-grey; feathers spotted with white; flanks white banded with slaty-grey; under wing- and tail-coverts white with an occasional black spot; centre of the abdomen and vent pure white, bill black; feet dark olive-brown; irides nearly black. Total length 14.8 inches, of bill from front 3.5, from gape 4.3, wing 8.0, tail 5.3, tarsus 0.4, middle toe 1.0, hind toe 0.3.

Adult female. Similar to the male, but instead of the upper part of the chest being rufous, it is replaced by a broad slate-coloured band, each feather being banded with white; below this is a white band, and the rest of the under-surface of the body with the under wing- and tail-coverts rufous. Total length 16.5 inches, of bill from front 3.5, from gape 4.5, wing 8.0, tail 4.75, tarsus 0.4, middle toe 1.0, hind toe 0.3.

Young female. Similar to the adult female, but has the feathers of the band on the breast darker and edged with white, the whole band tinged with rufous.

Young male. Similar to the young female, but has the abdomen and under wing- and tail-coverts white. From an examination of several young males I am induced to believe that as the bird advances in age the rufous colouring of the under wing-coverts becomes pure white as in the adult male; then the abdomen loses the rufous colouring, the flanks and under tail-coverts becoming slaty-grey barred and spotted with white, the latter again in very old birds becoming pure white. At the same time the black feathers on the upper part of the breast disappear, being replaced by a rufous band.

Hab. Abyssinia, East Senaar (*Heuglin*), White Nile (*Petherick*, *mus. Wald.*), Senegal (*mus. Hein.*), River Gambia (*mus. Brem.*), Casamanze (*Verreaux*), Bissao (*Verreaux*), Ashantee (*Pel*), Fantee (*Pel*), Congo (*mus. Dres.*, *Brit.*), Gaboon (*Verreaux*), St. Thomas (*Gujon*), River Quanza (*Monteiro*), Damaraland: River Okavango, River Tioughe (*Andersson*), Cape Colony (*Layard*), Knysna (*Andersson*), Caffraria (*Brehm*, *mus Lugd.*), Natal (*Ayres*), Transvaal (*Ayres*), Zambesi (*Kirk*).

Considerable doubt has existed as to whether the Great African Kingfishers inhabiting the Æthiopian Region constitute one or two species. Professor Reichenbach separated them into two under the names of *Megaceryle maxima* (Pall.) and *Megaceryle gigantea* (Swains.), and in this conclusion he is followed, but not without considerable hesitation, by Dr. Hartlaub. It should be noted that the learned doctor assigns 'Congo' as the habitat of *C. maxima* on the authority of Pallas, whereas the latter distinctly states that his specimens came from the Cape of Good Hope; the authority for 'Congo' is Professor Reichenbach who had specimens in the Dresden Museum from that locality. The differences between *C. maxima* and *C. gigantea* are chiefly those of size, and no character can be less trustworthy in the consideration of Kingfishers. Drs. Hartlaub and Finsch, however, in their new work on East African Ornithology unite the two species, and this conclusion is doubtless the correct one. But we are not the less indebted to Mr. Gurney, who by a careful examination of specimens sent from Natal by Mr. Ayres, in 1859, endeavoured to set the matter right, and his observations are entirely correct. I am able to add, as will be seen above, some additional notes on the changes of plumage, and I have to thank Mr. Gurney for very kindly sending for my inspection the specimens examined by him.

A brief analysis of the specimens described and figured by the authors to whom reference is made in the present work, may be serviceable to the student. Pallas gave a very good description as far as it went, but he described the male as the female, and *vice versâ*. Buffon figures a young male, while Rüppell's description of the female is really that of a young bird. Swainson figures a very old male, but the plate is wretchedly coloured. I do not attach much importance to the crest being unspotted, as I dare say that in very old *Ceryle maxima* it is so, though out of the large series of specimens I have examined, I have never

seen one. But the unspotted back of Swainson's plate would bring the bird at once near *Ceryle sharpii*, and it is, therefore, well to state that this omission is evidently caused by the carelessness of the colourist, for both in Swainson's and Hartlaub's descriptions the bird is said to have the back spotted. The absence of bars on the abdomen at once shews that it is not *Ceryle sharpii*, which is, I believe, a very good species indeed. An examination of the type-specimen proves that it cannot be referred to any stage of plumage of *C. maxima*, by reason of the intense barring on the abdomen and under wing- and tail-coverts. It is a very old bird, and therefore exhibits characters exactly contrary to *C. maxima*, which, as it becomes old, quickly loses all bars on these parts, leaving them of a pure white. A comparison of the plates, however, will best exhibit the difference between the two species. To return to our subject, Reichenbach's figures intended to represent *Ceryle maxima* (figs. 3101 and 3102) are really nothing but the young male and female, while his figures of the bird he calls *C. gigantea* (figs 3103 and 3486), the former a copy of Swainson's plate above referred to, represent old male and female birds. Mr. Gurney's descriptions are correct, as also are those given by Drs. Hartlaub and Finsch.

The following notice of the habits of *Cergle maxima* has been given me by my friend Mr. J. J. Monteiro, who has contributed so largely to our knowledge of West African Ornithology.

"This very fine bird I have only seen on the River Quanza (Coanza), generally on the bare or dead branches of trees overhanging the river, sitting upright, with its head at nearly right angles to its body, and the crest at the back prominently exhibited. The flight is heavy and slow."

Mr. Ayres states that in Natal, "these birds frequent the rivers and lakes, and are not found far from the coast. They feed entirely on fish, which they dart on from their perch on a bough above. When flying, they make a loud chattering noise, audible at a great distance. They generally roost at night at the same pool and on the same pond for a length of time, wandering away in the day-time and returning at night. I find in some of them intestinal worms (somewhat similar to the wire-worm of England) which eat into their flesh and entrails, but do not seem to injure the health of the bird."

Mr. Layard (*l.c.*) has published the following note:—

"This, the largest of our Kingfishers, is not at all uncommon, and is very widely distributed. It is migratory, and I know nothing of its habits. It frequents the "Salt River" and other small streams in the neigbourhood of Cape Town, perches on trees, and is wary and difficult of approach. Its flight resembles that of the American Belted Kingfisher, and like that species, whilst on the wing, it utters a loud chattering cry. Indeed it so closely resembles *Al. alcyon* that when I first heard and saw it, I thought an old friend was before me, in a new country; a near approach, however soon dispelled the illusion. Habitat: Cape Colony and Natal extending into Damara Land. Feeds on crabs, fish, frogs and reptiles; very common at Zoetendals valley and along the river Zonder End."

In a recent number of the "Ibis" Mr. Layard adds that his friend W. Atmore informs him that he "once found one of these birds with his bill shattered, evidently against a stone while striking his prey in too shallow water."

Mr. Kirk (*l.c.*) found the present species in the Zambesi country "frequent throughout the country on the courses of the rivers, feeding exclusively on fish which he catches when on the wing by dropping suddenly, carrying its prey off in the bill, and swallowing it at its leisure, perched on a tree."

The figures in the plate represent an old male in my own possession collected by Andersson at the Knysna on the 10th of March, 1866, and a female from among Mr. Ayres' Natal specimens, lent me by Mr. Gurney. The descriptions and measurements are also from the same birds. The young male and female are described from specimens in my own collection from South Africa and the River Gambia.

CERYLE SHARPEI.

CERYLE SHARPII.

(SHARPE'S KINGFISHER.)

Ceryle Sharpii . . . . . Gould, Ann. Nat. Hist. 1869, p. 271.

C. sexibus dissimilibus: dorso schistaceo nigro, immaculato: subalaribus, subcaudalibus et abdomine toto schistaceis, albo transfasciatis.

Hab. in prov. Gabonensi Africæ occidentalis.

Head, cheeks and ear-coverts dark slaty-grey, almost black, on a few feathers of the crest a very tiny white spot; back and scapularies dark slaty-grey unspotted, a few of the latter having a tiny white spot at the tip of the feather; lower part of back slaty-grey with tiny spots of white; wing-coverts dark slaty-grey, the lesser wing-coverts being marked with a heart-shaped spot; tail blackish grey, with small white bars and markings; primaries blackish, the inner web white at the base, and having a few bands of white along the web, the primaries with a deep black gloss, the secondaries washed externally with slaty-grey and studded with small spots of white; a line of white feathers marked with longitudinal black spots, extends from the base of the lower mandible on to the sides of the neck; below this a line of black feathers from the base of the lower mandible border the throat, which is pure white; upper part of the breast rich chestnut; lower part of the breast, entire abdomen, sides of the body and under wing- and tail-coverts grey, thickly banded with white; bill black; feet olive-brown. Total length 14.5 inches, bill from front 3.0, from gape 4.0, wing 7.3, tail 4.2, tarsus 0.35, middle toe 0.9, hind toe 0.3.

Hab. Gaboon (*mus. J. Gould*).

This fine African Kingfisher, with which Mr. Gould has done me the honour to associate my name, differs from the well known *C. maxima*, in the darker tone of the plumage, in the total absence of spots on the back, in the colour of the abdomen and under tail-coverts, which are grey, barred with white, and in the under wing-coverts being profusely barred with black, a character never obtained in any stage of plumage of *C. maxima*. The spots also are rounder, and not longitudinal as in *C. maxima*.

The type-specimen is evidently a very old bird. I have carefully compared it with equally mature examples of *C. maxima* and find them to differ as above stated. The accompanying plate gives a faithful representation of the bird, taken, as are the descriptions and measurements, from the type specimen in Mr. Gould's collection.

CERYLE TORQUATA.

CERYLE TORQUATA.

(RINGED KINGFISHER.)

Alcedo torquata, ...	Linn. Syst. Nat. I, p. 180 (1766).
Ceryle torquata, ...	Bonap. P.Z.S., 1837, p. 108.
Megaceryle torquata, ...	Reich. Handb. *Alced.* p. 24, t. ccccxi, fig. 3106 (1851).
Strepto ceryle torquata	Bonap. Consp. Vol. Anis. p. 10 (1854).
Alcedo cyanea, ...	Vieill. Nouv. Dict. XX., p. 401 (1818).
Alcedo cinerea, ...	Bon. et Vieill. Enc. Meth. I. p. 286 (1823).
Megaceryle cæsia, ...	Reich. Handb. *Alced.* p. 24, t. ccccxi, fig. 3107 (1851).
Martin-pecheur huppé de Mexique, . . .	Buff. Pl. Enl. 284.
Martin-pescador celeste, ...	Azara Apunt. 417.
Martin-pescador celeste obscuro, . . .	Azara, Apunt. 418.

C. sexibus dissimilibus: major: dorso claré schistaceo immaculato: abdomine rufo: torque pectorali maris absente.

Hab. in regione Neotropicâ.

Male. Above slaty-blue, with a narrow black stripe down the centre of the feather, more distinct on the head, which is crested; wing-feathers blackish, the inner web pure white at the base extending for half the length of the feather, the secondaries tipped with white and irregularly barred with black on the inner web, the outer web broadly edged with slaty-blue, with here and there a few little spots of white; tail blackish, the middle feathers slaty-blue with only the centre black; the other feathers edged externally with with slaty-blue and all more or less spotted and barred with white; throat, sides of, and a collar round the neck, pure white; breast deep rich chesnut; under wing-and tail-coverts with the lower part of the abdomen white; bill dark horn-colour; feet dark greyish-brown. Total length 16.5 inches, of bill from front 3.0, from gape 3.8, wing 7.7, tail 4.5, tarsus 0.4, middle toe 0.9, hind toe 0.3.

Additional references.—*Alcedo torquata,* Less. Tr. d'Orn. p. 242 (1831); Cab. Schomb. Reis. in Guian. III, p. 703 (1848); Schl. Mus. Pays. Bas, *Alced.* p. 4 (1863); Müll. Reis. in Mex. III, p. 563 (1865); *Ceryle torquata,* Gould, Voy. Beagle, Birds, p. 42 (1841); Gray, Gen. of Birds, I, p. 79 (1848); Hartl. Ind. Azar. p. 26 (1847); Gray, Cat. Fiss. Brit. Mus. p. 61 (1848); Bonap. Consp. Gen. Av. 1, p. 160 (1850); Cass. Cat. Halc. Phil. Mus. p. 2 (1852); Licht. Nomencl. Av. p. 67 (1854); Pelz. Sitz. Akad. Wien. 1856, p. 514; Sclater, P.Z.S. 1856, p. 139, id. 1859, p. 202; Scl. and Salvin, Ibis, 1859, p. 131; Moore, P.Z.S. 1859, p. 53; Cass. Proc. Phil. Acad. 1860, p. 133; Scl. P.Z.S. 1860, p. 284, Scl. and Salv. 1866, p. 191; Leot. Ois. de Trinid. p. 106 (1866); Scl. and Salv. P.Z.S., 1867, pp. 280, 581, 978, Pelz. Orn. Bras. p. 23 (1868): Gray, Handl. of B. p. 97 (1869): *Alcedo cyanea,* Bon. et Vieill. Enc. Meth. I, p. 395 (1823); Wied, Beitr. Naturg. Bras. IV, p. 5 (1832): *Megaceryle cæsia,* Burm. Th. Bras. II, p. 405, note (1856); *Megaceryle torquata,* Burm. Th. Bras. II, p. 404 (1856); et Reise La Plata, II, p. 446 (1861); *Streptoceryle torquata,* Cab. and Heine, Mus. Hein. II, p. 150 (1860); Cab. Journ. f. Orn. 1862, p. 162.

Female. Similar to the male, but with a broad slaty-blue band across the breast, with a narrow white band below it; and the whole of the abdomen and under wing-and tail-coverts rich chesnut.

Young Female. Very similar to the old female, but the bill very much shorter, the stripes on the head very broad and dark, so that little of the grey edgings are seen, the forehead especially being nearly black; wing-coverts more narrowly edged with grey than in the old bird, so that the black bases of the feathers are more conspicuous, the whole of these coverts being also tinged with rusty brown; under wing-coverts, whitish tinged with rufous, and some of the lower ones barred with slaty grey; rest of the under surface as in the old female, excepting the breast-band, which is dull grey tinged with reddish, the shaft of each feather appearing very plainly.

Young male. Similar to the young female, but has the whole of the external edge of the wing-coverts and quills profusely spotted with good-size spots of white; under wing-coverts as in the young female, as also the breast-band which, however, is more distinctly tinged with rufous in the centre, remaining grey on each side.

Central America: Mexico (*le Strange*), Jalapa (*Salle*), Guatemala, Lake Peten (*Leyland*), Lanquin (*Salvin*), British Honduras, Belize River (*Salvin*), Honduras, Omoa (*Leyland*), Mosquitia (*Wickham*). Costa Rica (*Carmiol*): Veragua, Panama (*McLeannan*), Chepo (*Arcé*), Rivers Atrato and Truando (*Michler*). New Granada (*Mus. R.B.S*). Ecuador, Babahoyo (*Fraser*). Trinidad (*Leotaud*). Guiana: Surinam (*C. Bartlett*), British Guiana (*Schomburgk*), French Guiana (*Rothery, mus. Cantabr.*), Cayenne (*Mus. R.B.S*). Amazonia, Mexiana and Tocantins (*Wallace*), Barra do R. Negro, Borba (*Natterer*), Pebas (*Hauxwell*), Lower Ucayali and Huallaga (*E. Bartlett*). Brazil: Maranham (*Wendeborn, Mus. Salv. and Godm.*), Bahia (*Wucherer*), Sapitiba, Marambaya, Island of Tacurgar, Ypanema, Curytiba, Rio do Baraxudo, Paranagua, Irisanga (*Natterer*), Novo Fribourgo, Congonhas (*Burmeister*). Parana (*Burmeister*).

I am indebted to Mr. Osbert Salvin for the loan of a beautiful series of specimens from his collection, which with those kindly lent me by Dr. Sclater and the fine series in my own collection, has placed at my disposal an amount of material seldom at the command of a Monographist. I have, therefore, been enabled to give a detailed account of the plumage of both sexes at different ages, and I further find that the age of the bird can pretty correctly be determined by an examination of the under tail-coverts. The old female has the under wing and tail-coverts rich chesnut like the body, and the young female only differs in having the under wing-coverts white tinged with rufous. The young male resembles the old female, and as the bird advances in age, the band on the breast disappears by being interrupted in the centre, and the under wing-coverts become white, while the feathers on the lower part of the abdomen and under tail-coverts also become white, the rufous tinge gradually disappearing, and, finally, the white under tail-coverts become barred with slaty-blue. This last character indicates a very old bird, and it is seldom that one is seen with the bars fully developed all over the tail-coverts.

Mr. Osbert Salvin has very kindly supplied me with the following observations on the present bird, as observed by him in Guatemala:—

"*Ceryle torquata* cannot be called a common species in Guatemala, as its range seems strictly confined to the streams of the warmer portions of northern Vera Paz, Peten, and the adjoining county of British Honduras. No part of the former department is so thoroughly ransacked for birds as the forests surrounding the Indian village of Choctum, but I never recollect having seen a skin amongst the thousands I have examined from that part. It was, however, in this neighbourhood that I first heard of the bird, recognizing the description given me of a great 'Martin Pescador' that had been seen near Choctum as applicable to this species. On the 14th of March, 1862, when travelling to Peten, I obtained my first specimen whilst staying for a day at the village of Lanquin. This village is situated about 1,200 feet above the sea level. During my journey down the

Belize River, after leaving Peten, I saw a number of this Kingfisher every day. Their favorite station, when watching for fish or resting, is an old snag or branch of a tree half submerged in the water. From this, as our canoe approached, they would rise, and take a flight of two or three hundred yards down the river, and then alight again. As we passed down three or four birds would thus fly before us, till they, not liking to be driven further from their accustomed haunts, would suddenly turn and dart past us at full speed. The steep clay banks of the river were pierced in many places with the holes in which their nests are placed."

"The range of *Ceryle torquata* in Central America is extensive. The collection brought by Mr. Le Strange from Mexico contains three examples. Southward of Guatemala specimens have been collected by Carmiol in Costa Rica, and I have seen a specimen from the Mosquito territory. McLeannan has forwarded specimens from Panama and Arce others from Chepo, on the River Bayano."

The following interesting note has been kindly forwarded by Mr. Edward Bartlett:—

"The *Ceryle torquata* is the commonest of all Kingfishers on the Amazons and its tributaries, and is seen in colonies about the steep clay banks. I found this bird wherever I went, at the mouth of the Amazons, and also at the highest points reached by me on the Maranon, Ucayali, and Huallaga Rivers. It breeds in company with *C. amazonia*. The nest, however, is placed very much deeper in the bank than in the case of the last-named bird, the hole being from four to six feet in depth, with a chamber at the end sufficiently large for the young when nearly full grown. The eggs are pure white, four in number."

In the collection formed by Lieut. Michler during the survey of the Isthmus of Darien, Mr. Cassin informs us, were "numerous specimens, exclusively adults in fine plumage," and Mr. C. J. Wood, who accompanied the expedition, remarks that this Kingfisher was "very abundant in the immense swamps on the Atrato and Truando, alighting on the low trees and uttering a loud shrill note. It catches small fishes, apparently very easily on account of their abundance, and returns to the tree."

Prince Maximilian gives the following details respecting the present species :—

"We found these birds most abundant on the shores of the beautiful and interesting Parahyba, where we found a considerable number within a small area, and procured them without difficulty; on other rivers, however, we did not see the bird, and therefore we often killed none for a long time. They are large handsome birds, and have the habits of our German Kingfisher. They sit on boughs over the water and move the tail, also sometimes raising the feathers of the crown. Their food consists of fishes, the remains of which are found in their stomachs; they dive quickly after these. I have never found lizards in their stomachs, but it is possible so powerful and greedy a bird catches these at times. I have only found the nest once. It was over 1,000 paces from the shore of the Rio da Aldea Belha, in a high clay side of a mountain, whither we saw the birds fly high and swiftly with fish in their bills. As I saw them creep in the ground, the place was climbed to, and I found a deep circular hole in the clay soil in which we put reeds, and soon felt the young birds biting at them and we could draw them out to some distance, but still not quite to the entrance. The Brazilians tell me that this species lays two white eggs. They generally nest like our European Kingfisher, and other allied species in a smooth round hole five or six feet deep, in the bank directly over the water. The young are very voracious, and therefore immediately fastened on to our rods with greedy cries."

The figures in the plate are from specimens in my own collection, the female from Cayenne, the male from Bahia. It will be observed that the under tail-coverts being white indicate a moderately old bird, the tinge of rufous being the last remains of the young plumage. The description and measurements are also from specimens in my collection, that of the old female being the Cayenne specimen figured in the plate, while that of the adult male is taken from a fine skin from Bahia.

CERYLE STELLATA.

(CHILIAN KINGFISHER.)

Alcedo stellata	Meyen, Obs. Zool. p. 93, t. xiv (1834).
Ceryle stellata	Licht. Nomencl. Av. p. 67 (1854).
Megaceryle stellata	Reich. Handb. *Alced.* p. 24, t. ccccxviii, fig. 3487 (1851).
Streptoceryle stellata	Cab. and Heine, Mus. Hein. th. II, p. 151 (1860).
Chloroceryle stellata . . .	Scl. Cat. Am. Birds, p. 264 (1862).
Alcedo torquata	Tsch. Consp. p. 39.
Ceryle torquata	Fras. P. Z. S. 1843, p. 110.

C. sexibus dissimilibus : minor : dorso clarè schistaceo, albo stellato : abdomine rufo : torque pectorali maris absente.

Hab. in parte meridionali regionis Neotropicæ.

Above slaty-blue, the feathers of the crest marked longitudinally with broad black shaft-stripes ; back also marked with dark stripes and profusely spotted with white ; quills and tail black, externally margined with slaty-blue and banded with white ; throat and sides of the neck extending backwarks and forming a nuchal collar, white ; upper part of the breast slaty-blue, with rufous markings on some of the feathers ; below this slaty band a narrow one of white ; rest of the under surface of the body rufous, with a few grey and white barrings on the flanks and under tail-coverts ; bill and feet blackish. Total length 15·5 inches, of bill from front 2·15, from gape 3·2, wing 7·3, tail 4·3, tarsus 0·4, middle toe 0·9, hind toe 0·25.

Hab. Chili (*Meyen*, *Gay*), Port Otway and Port Galant, Straits of Magellan (*Cunningham*).

I have thought it best not to give a figure of this species, as at present I am by no means certain that it has claims to distinct specific rank. Some of the differences adduced by Meyen, the original describer, depend on the relative age of the bird, and the only characters of importance are the spotted back and shorter bill. I have seen several specimens of *Ceryle stellata*, but as yet have not had the good fortune to meet with an adult male, but all the birds examined have certainly had spotted backs and smaller bills than *C. torquata*. I therefore keep the two species distinct on the supposition that future observation will confirm the constancy of these characters.

Additional references.—*Alcedo stellata*, Tsch. Faun. Peruan. p. 254 (1844); Burm. th. Bras. II, p. 405, note (1856). *Ceryle stellata*, Pelz. Voy. Nov. Vög. p. 50 (1865); Sclater, P. Z. S. 1867, pp. 327, 338; Scl. & Salv. Ibis, 1868, p. 187, id. 1869, p. 283; Gray, Hand-list of B. p. 97 (1869). *Alcedo torquata*, Bridges, P. Z. S. 1841, p. 84; Gay, Faun. Chil. p. 270 (1847).

Gay in the "Fauna Chilena" gives the following details:—

"This bird is tolerably common in Chili, frequents rivers and is constantly to be seen perched upon bare branches, especially the most projecting ones, waiting immoveable and with the greatest patience for fishes to pass, when he darts upon them like a flash. He swallows his fish whole on leaving the water, but if it is too big he stops on a neighbouring tree to tear it to bits and devour it piecemeal. Being of a sad and melancholy nature it is always found alone, and when it flies utters a long repeated cry *Keti Keti;* and this is the name which the Araucanos and the country people give it. The female makes her nest in holes of banks and lays three white eggs."

The description is taken from a female specimen in Dr. Sclater's collection from Chili. Mr. Salvin has one in his collection which has not nearly so many white spots on the back as in Dr. Sclater's specimen.

CERYLE ALCYON ♂ & ♀.

CERYLE ALCYON.

(BELTED KINGFISHER).

Alcedo alcyon . .	Linn. Syst. Nat. I, p. 180 (1766).
Ceryle „ . .	Boie, Isis, 1828, p. 316.
Streptoceryle „ . .	Cab. and Heine, Mus. Hein. th. II, p. 151 (1860).
Megaceryle „ . .	Reich. Handb. *Alced.* p. 25, t. ccccxii, fig. 3108—9 (1851).
Chloroceryle „ . .	Sclater, Cat. Am. Birds, p. 264 (1862).
Ispida „ . .	Swains. Class. of Birds, II. p. 336 (1837).
„ *ludoviciana*, .	Gm. Syst. Nat. I. p. 452, var. β. and γ (1788).
Alcedo guacu, . .	Vieill. Nouv. Dict. xix. p. 406 (Cassin).
„ *jaguacati*. . .	Dumont, Dict. Sci. Nat. I. p. 455 (Cassin).
Megaceryle domingensis .	Reich. Handb. *Alced.* p. 25, t. ccccx, fig. 3105 (1851).

Martin-pecheur de la Louisianne, Buff. Pl. Enl. 715.

Martin-pecheur huppé de St. Domingue, Buff, Pl. Enl. 593.

C. suprà schistacea: subtus alba, torque pectorali schistaceâ: hypochondriis schistaceo mixtis. Fem. torque alterâ inferiori rufâ, et hypochondriis rufis distinguenda.

Hab. in totâ regione Nearcticâ et in totâ Americâ Centrali.

Above slaty-blue, the head crested, each feather having a black line down the centre; a spot in front of the eye, and a collar round the back of the neck, white; wing-coverts spotted with white; wing-feathers black, tipped with white, the basal half of the inner web of the primaries white, the outer web being marked with the same colour, the inner web of the secundaries marked with white, as also the outer web which is broadly edged with slaty-blue; tail slaty-blue, irregularly banded and spotted with white; the entire under surface white, with the exception of a broad band of slaty-blue on the upper part of the breast, and the flanks, which are marked with slaty-blue; beak black; feet dark blue-grey; eyes dark brown. Total length 12 inches, of bill from front 2, from gape 2.5, wing 6.4, tail 3.2, tarsus 0.3, middle toe 0.7, hind toe 0.2.

Hab. Entire Continent of North America (*Baird*). Central America, Mexico, Jalapa (*de Oca*), Guatemala, Dueñas, San Geronimo, Coban, Mexico, Huamuchal (*Salvin*). Brit. Honduras, Belize (*Salvin*). Honduras, Omoa (*Leyland*), Costa Rica (*Hoffman*), Veragua, Panama (*McLeannan*). Antilles, Santa Cruz (*Newton*), St. Domingo (*Sallé*, *Bryant*), Jamaica (*Osburn*, *Gosse*), Cuba (*Gundlach*).

Additional References.—*Alcedo alcyon*, Lath, Ind. Orn. I. p. 257 (1790); Wils. Am. Orn. III. p. 59, pl. 23, fig. 1 (1811); Bon. and Vieill. Encl. Meth. I. p. 283 (1823); Swains. and Rich. Faun. Bor. Am. II, p. 339 (1831); Aud. Orn. Biogr. I. p. 394 (1831); Thomp. Birds of Irel. I. p. 373 (1849); Schl. Mus. Pays Bas, *Alced.* p. 4 (1863); *Ceryle alcyon*, Gray, Gen. of Birds. I. p. 82 (c. 1844); Cat. Fiss. Brit. Mus. p. 62 (1848); Bonap. Cons. Gen. Av. I. p. 160 (1850); Cass. Cat. Halc. Phil. Mus. p. 2 (1852); id. Birds Cal. and Texas, p. 254 (1856); Baird, Cass. and Lawr. Birds of N. Am. p. 158 (1860); Sam. Orn. New Engl. p. 125 (1867). *Streptoceryle alcyon*, Bonap. Cons. Vol. Anis, p. 10 (1854).

The present species may be considered the type of the large slate-coloured group of the genus *Ceryle*, which has been separated by some authors as a distinct genus under the title of *Streptoceryle*. It is a native of North America, extending southwards as far as the Isthmus of Panama, from which place it has been sent by Mc'Leannan. In the northern states it is migratory, departing southwards on the approach of winter, and is stated by Professor Baird in his valuable article on the "Migrations of American Birds," to be a regular visitor to the Bermudas from September to April. With regard to the extent of its range northward I quote the following remarks of Captain Blakiston.[a]

"Besides the specimen from the Rocky Mountains already noted ('Ibis' vol. iv. p. 3.) I obtained a second from my friend Mr. J. C. Clare, at York Factory, on Hudson's Bay; there are others also in the Smithsonian Institution, from between that place and Lake Winipeg, and also from Red River Settlement. Dr. Richardson, and Mr. Bernard Ross have noted the Belted Kingfisher up to 67° N. Lat., and I have observed the bird the whole distance across the interior, from Hudson's Bay to the Western base of the Rocky Mountains. It remained, in 1857, on the lower part of the Saskatchawan River till the 7th of October; and I observed it in 1859 at Pembina, where the 49th parallel crosses the Red River of the north, on the first of May."

"Dr. E. Coues[b] says:—"I ascertained the existence of this bird in Labrador from a single skin in the possession of the natives. They considered it a rare bird."

Mr. Dresser in his paper on the "Birds of Southern Texas,"[c] observes—"It is common in the Rio Grande and throughout Texas, where it remains to breed." Mr. Salvin observed the Belted Kingfisher at Belize, and again on the Golfo Dolce, and he informs me that it is tolerably common in the winter on the Atlantic Coast and throughout the whole country of Guatemala.

Mr. G. C. Taylor also remarks,[d] that "it was seen on several occasions" in Honduras.

The present species was also observed by Messrs. A. and E. Newton in St. Croix,[e] and is said by them to be apparently a winter visitant, leaving the island late in April. It chiefly frequents the Mangrove swamps and the mouths of the small streams; but sometimes fishes half a mile out at sea. Its loud call has been well likened to the noise made by springing a watchman's rattle.

Its food does not always seem to consist of fish, as Mr. A. Newton continues, "the stomach of one I skinned contained shells of crabs."

Mr. E. Newton further remarks, "I saw what I believe to have been a bird of this species on my passage home in October 1858, in lat. 26° 17′ N., long. 57° 28′ W. It flew round the steamer several times within gunshot; and I could clearly make out the dark belt across its breast."

Dr. Bryant[f] records it from St. Domingo and observes, "Reichenbach has described this bird from St. Domingo as a species, as he did many other birds, without ever seeing them, in the hope that some one would discover that a difference existed, and he would get the credit of it. In the present case he was unfortunate."

Professor Reichenbach, it should be added, confesses that he is unaware of the exact locality of the bird he calls *domingensis*, and to judge from his plate, it looks like a made up specimen from *C. torquata* and *C. maxima* (from Africa), to which last species Professor Schlegel (*l. c.*) seems inclined to refer it; but naturally hesitates to put the name of *domingensis* as a synonym of an African species.

Two specimens of the Belted Kingfisher were obtained in Ireland in 1845, one at Annsbrook, and the other at Luggela, Wicklow. This is the only instance of its occurrence in Europe, but after reading Andubon's note recorded below concerning the power of flight of this species, we ought not to be surprised at its appearance in this part of the world. Moreover, the time of the year (Oct. 26) on which the first specimen was shot would seem to suggest that the birds, in making one of their long

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a. Ibis. 1863, p. 67. b. Proc. Phil. acad. 1861, p. 217. c. Ibis. 1865, p. 471.
d. Ibis. 1860, p. 116. e. Ibis. 1859, p. 67. f. Proc. Bost. Soc. Nat. Hist. 1866, p. 95.

flights at the period of migration were forced out of their course by an adverse wind, and thus unwittingly driven to cross the Atlantic.

From Wilson's well-known work, I have extracted the following remarks, somewhat lengthy, perhaps, but of great interest, as being the first original observations on the habits of this species.

"Amidst the roar of the cataract, or over the foam of a torrent, he sits perched upon an overhanging bough, glancing his piercing eye in every direction below for his ready prey, which with a certain circular plunge he sweeps from their native element and swallows in an instant. His voice which is not unlike the twirling of a watchman's rattle, is naturally loud, harsh and sudden; but is softened by the sound of the brawling streams and cascades among which he generally rambles. He courses along the windings of a brook or river, at a small height above the surface, sometimes suspending himself by the rapid action of his wings like certain species of hawks, ready to pounce on the prey below; now and then settling on an old dead limb to reconnoitre. Mill-dams are particularly visited by this feathered fisher; and the sound of his pipe is as well known to the miller as the rattling of his own hopper. Rapid streams with high perpendicular banks, particularly if they be of a hard clayey or sandy nature, are also favorite places of resort for this bird; not only because in such places the small fish are more exposed to view; but because those steep and dry banks are the chosen situations for his nest. Into these he digs with bill and claws, horizontally, sometimes to the extent of four and five feet, at the distance of a foot or two from the surface. The few materials he takes in are not always placed at the extremity of the hole; that he and his mate may have room to turn with convenience. The eggs are five, pure white, and the first brood usually comes out about the beginning of June, or sometimes sooner, according to that part of the country where they reside. On the shores of Kentucky river near the town of Frankfort, I found the female sitting early in March. They are very tenacious of their haunts, breeding for several successive years in the same hole, and do not readily forsake it, even though it be visited."

"Though the Kingfisher generally remains with us, in Pennsylvania, until the commencement of cold weather, it is seldom seen here in winter; but returns to us early in April. In North and South Carolina, I observed numbers of these birds in the months of February and March. I also frequently noticed them on the shores of the Ohio, in February, as high up as the mouth of the Muskingum."

Audubon's notes from his 'Ornithological Biography,' are very copious, and I have therefore only made use of such portions as will serve to give a fuller insight into the habits of the species. He says:—

"The flight of this bird is rapid, and is prolonged according to its necessities, extending at times to considerable distances, in which case it is performed high in the air. When, for instance, the whole course of one of our Northern Rivers becomes frozen, the Kingfisher, instead of skimming closely over the surface that no longer allows it to supply itself with food, passes high over the tallest trees, and takes advantage of every short cut which the situation of the river affords. By this means it soon reaches a milder climate. This is also frequently the case, when it seems tired of the kind of fish that occurs in a lake, and removes to another in a direct line, passing over the forests, not unfrequently by a course of twenty or thirty miles towards the interior of the country. Its motions when on wing consist of a series of flaps, about five or six in number, followed by a direct glide, without any apparent undulation. It moves in the same way when flying closely over the water."

"If in the course of such excursions, the bird passes over a small pool, it suddenly checks itself in its career, poises itself in the air, like a Sparrow-hawk or Kestril, and inspects the water beneath, to discover whether there may be fishes in it suitable to its taste. Should it find this to be the case, it continues poised for a few seconds, dashes spirally headlong into the water, seizes a fish, and alights on the nearest tree or stump, where it swallows its prey in a moment."

Speaking of the holes in which the Belted Kingfisher breeds, the same author says:—

"I have laid open to my view several of these holes, in different situations and soils, and have generally found them to be formed as follows. The male and female, after having fixed upon a proper spot, are seen clinging to the banks of the stream in the manner of Woodpeckers. Their stout bills are set to work, and as soon as the hole has acquired a certain depth, one of the birds enters it, and scratches out the sand, earth or clay, with its feet, striking meanwhile with its bill to extend the depth. The other bird all the while appears to cheer the labourer, and urge it to continue its exertions; and when the latter is fatigued takes its place. Thus by the co-operation of both, the hole is dug to the depth of four, five, or sometimes six feet, in a horizontal direction, at times not more than eighteen inches below the surface of the ground, at others eight or ten feet. * * * * Incubation continues for sixteen days. In the Middle States, these birds seldom raise more than one brood a year, but in the Southern usually two. Incubation is performed by both parents, which evince great solicitude for the safety of the young. The mother sometimes drops on the water, as if severely wounded, and flutters and flounders as if unable to rise from the stream, in order to induce the intruder to wade or swim after, whilst her mate, perched on the nearest bough, or even on the edge of the bank, jerks his tail, erects his crest, rattles his notes with angry vehemence, and then springing off, passes and repasses before the enemy, with a continued cry of despair."

"I have not been able to ascertain whether or not the young are fed with macerated food disgorged by the parents into their bills, but I have reason to think so, and I have always observed the old ones to swallow the fishes which they had caught, before they entered the hole. The young are, however, afterwards fed directly on the entire fish; and I have frequently seen them follow the parent birds, and alight on the same branch, flapping their wings, and calling with open bill for the food just taken out of the water, when the petition was seldom denied."

From Mr. Samuel's work, the latest published on American Ornithology, I have taken the following note (*l. c.*):—

"When perched on a limb overhanging the water, he frequently jets his tail in the manner of the Peewee, and often descends from such a perch and seizes a frog or a fish, and I once shot one that had just seized a meadow mouse *(arvicola)* in this manner. The young usually remain in the hole in the bank until they are about fledged. I am inclined to think, that usually they return to these holes at night and in stormy weather, as I have frequently seen them about their nests long after they were fledged, and have even seen them passing into them at the close of the day. In migrating, the young leave their parents, and these even separate, and pursue their journey alone; and it is a case of rare occurrence that two are seen together after the latter part of August."

There seems to be some little confusion as to the identity of the female of the present species, and curiously enough I have not been able to meet with a sexed specimen in this country; but the figure of the female in the plate has been taken from a bird properly named and sexed, in the Leiden Museum (No. 7 of Schlegel's Cat.). From this it would appear that the female is distinguished by red flanks and by a second band of rufous below the ordinary 'belt.' This agrees with the descriptions of Wilson and Audubon, but the authors of the 'Birds of North America' (and after them Mr. Samuels, who seems simply to have copied their remarks) consider this rufous colouring to be the sign of young birds only. I find considerable differences in the measurements of old and young birds, and it seems also from observations in the above-mentioned work that differences also exist in specimens from different localities, those from the Pacific Coast 'being appreciably larger than Eastern ones.' I should be glad to receive any notes or specimens from any friends who have the opportunity of personal observation. My measurements and description are taken from an old male shot near Albany, New York, U.S.A., in my own collection.

CERYLE AMAZONIA.

(AMAZON GREEN KINGFISHER.)

Alcedo amazona, ...	Lath. Ind. Orn. I, p. 257 (1790).
Ceryle amazona, ...	Boie, Isis, 1828, p. 313.
Chloroceryle amazona, ...	Reich. Handb. *Alced.* p. 28, t. ccccxii, fig. 3110-3111 (1851).
Chloroceryle amazonia, ...	Cab. and Heine, Mus. Hein. th. II, p. 148 (1860).
Ceryle amazonia, ...	Scl. and Salv. P.Z.S. 1864, p. 363.
Ceryle amazonæ, ...	Léot. Ois. de Trinid. p. 111, (1866).
Alcedo vestita, ...	Dum. Dict. Sci. Nat. xxix, p. 472.
Alcedo rubescens, ...	Vieill. Nouv. Dict. d'Hist. Nat. xix, p. 408 (1818).
Chloroceryle leucosticta, ...	Reich. Handb. *Alced.* p. 29, t. ccccxiv, fig. 3116-17 (1851).
Martin-pescador obscuro dorada, . .	Azara, Apunt, No. 419.
Martin-pescador garganta roxa, . .	Azara, Apunt, No. 420.

C. sexibus dissimilibus: dorso œneo-viridi: gulâ albâ: major: alis extus immaculatis.

Hab. in Regione Neotropicâ.

Male. Bronzy-green above; head crested; a large band of feathers commencing from the base of the bill, and encircling the neck, white; quills blackish, edged externally with bronzy-green, the inner web white at the base and waved with bronzy-green markings on

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Additional References.—*Alcedo amazona*, Vieill. Nouv. Dict. d'Hist. Nat. xix, p. 339 (1818), Bon. et Vieill. Encl. Meth. I, p. 292 (1823), Wied. Beitg. Naturg. Bras. IV, p. 12. (1832), Tsch. Faun. Peruan. p. 254 (1844), Hartl. Ind. Azar. p. 26 (1847), Cab. Schomb. Reis. in Guian. II. p. 704 (1848), Schl. Mus. Pays Bas, *Alced.* p. 5 (1863). *Ceryle amazona* Gray Gen. of Birds, I, p. 82 (c. 1844), Gray, Cat. Fiss. Brit. Mus. p. 62 (1848), Bonap. Consp. Gen. Av. I, p. 160 (1850), Cass. Cat. Halc. Phil. Mus. p. 3 (1852), Licht. Nomencl. Av. p. 27 (1854), Sclater, P.Z.S. 1855, p. 136, Pelz. Sitz. Akad. Wien, 1856, p. 515, Moore, P.Z.S. 1859, p. 53, Cass. Proc. Phil. Acad. 1860, p. 133, Salv. Ibis, 1860, p. 195, Müller, Reis. in Mex. III, p. 563 (1865), Salv. P.Z.S. 1867, p. 152, Scl. and Salv. P.Z.S. 1867, p. 978, Pelz. Orn. Bras. p. 23 (1868). *Choloceryle amazona*, Bonap. Consp. Vol. Anis. p. 10 (1854), Burm. Th. Bras. II, p. 405 (1856), id. La Plata Reise, II, p. 446 (1861), Sclater. Cat. Am. Birds, p. 265 (1862) *Ceryle amazonia*, Scl. and Salv. P.Z.S. 1866, p. 192, id. P.Z.S. 1867, pp. 279, 581. *Alcedo vestita*, Less. Traité d'Orn. p. 242 (1831), Puch. Rev. de Zool. 1853, p. 386, Hartl. Journ. f. Orn. 1855, p. 423. *Alcedo rubescens*, Bon. et Vieill. Encl. Meth. I, p. 392 (1823). *Choloceryle leucosticta*, Burm. Th. Bras. II p. 406, note (1856).

the secondaries; tail-feathers bronzy-green above, blackish beneath, the inner web of all but the middle ones, spotted with white; a line of feathers from the base of the bill extending on to the sides of the neck, bronzy-green; throat white; a broad band across the chest bright rufous; abdomen and under wing- and tail-coverts white, the flanks streaked with bronzy-green; bill and feet black; eye nearly black. Total length 12 inches, of bill from front 2.5, from gape 3.5, wing 5.0, tail 3.0, tarsus 0,25, middle toe 0.6, hind toe 0.3.

Female. Similar to the male, but wanting the red chest-band, which is supplied by an interrupted band of bronzy-green.

Hab. Central America: Mexico, (*Mus. Philad.*), Honduras, Omoa (*Leyland*), Guatemala, Vera Paz, Rio Samala, San Geronimo (*Salvin*), Mosquitia (*Wickham*), Veragua, Panama (*Mc'Leannan*), Santiago (*Salvin*), R. Nercua (*Michler*). Guiana: British Guiana (*Schomburgk*), Surinam (*Mus. Philad.*) Cayenne (*Mus. P. L. Sclater*), New Grenada, Bogotá (*Mus. P. L. Sclater*). Trinidad (*Leotaud*). Amazonia: Para, R. Tocantins (*Wallace*), Pebas (*Hauxwell*), Lower Ucayali River (*E. Bartlett*). Brazil (*Max.*). Sapitiba, Marambaya, Matto-dentro, Ypanema, Paranagua, Ytararé, Irisanga, Goiaz (*Natterer*), Novo Fribourgo (*Mus. O. Salvin*), Paraná, (*Burmeister*). La Plata: Tucuman (*Burmeister*). Peru (*Tschudi*).

This is the largest of the white-bellied section of the American green-backed Kingfishers and is a beautiful species. It is a very common bird in South America, being particularly abundant in Brazil, where it was observed by Prince Maximilian, who published the following note on its habits:—

"This handsome Kingfisher was observed in most parts of the province visited by me, being, however, nowhere so plentiful as in the southern portion, at Cabo Frio, Marica, Sagoarema, and the lakes of Araruama, Ponta Negra, Lagoa Feia, &c., especially in those parts of the country where there are lakes in which water-plants grow. Here it sits on an isolated branch above the water, often in the thick shade of overhanging bushes and trees, and watches for its prey. It often moves its tail up and down when perching, and then afterwards plunges into the water. Its nest is found in the hole of a bank. It flies quickly, and close to the ground, and is rather shy. In general character and external form it exhibits considerable analogy with *Ceryle americana*, which seems to be its smaller prototype. In both these species the note is the same, and the size is the only difference."

I am indebted to Mr. Edward Bartlett for the accompanying notice of the habits of the present species as observed by him during his recent expedition to the Peruvian Amazons.

"*Ceryle amazonia* is found throughout the whole of the Amazon Region, breeding in considerable numbers on the steep banks of the rivers. This species is generally observed in the company of *Ceryle torquata* and on the approach of any intruder they fly up in numbers and keep up a loud and disagreeable chorus. The nest is generally placed in an extremely deep hole in a flat-faced bank, whence it is very difficult to obtain the eggs, which are four in number, of a pure white colour. The nest is composed of fish-bones and a few sticks, and the young remain in the nest until they are able to fly and provide for themselves. Legs and feet black; irides nearly black with a slight tinge of grey-brown."

In Trinidad, according to Leotaud, it is seldom seen, for he states that:—"This Kingfisher, very rare here, frequents the rivers at a distance from the salt waters."

In the accompanying plate the figures are drawn from a fine pair of birds in my own collection, the male being from Brazil, the female from Guatemala. The description of the male is taken from a specimen recently brought home by Mr. Edward Bartlett, from Santa Cruz, on the Huallaga River, while that of the female is from an adult bird, in Mr. P. L. Sclater's collection, from Panama. The young male exactly resembles the adult female. Young birds have the wings externally spotted with white, and it is evident that Reichenbach's *C. leucosticta* is founded on an immature specimen.

CERYLE CABANISI, ♂ & ♀.

CERYLE CABANISI.

(CABANIS' GREEN KINGFISHER.)

Alcedo Cabanisii,	. . .	Tsch. Faun. Peruan. p. 253 (1846).
Ceryle ,,	. . .	Gray and Mitch. Gen. of Birds, I, p. 82 (c. 1844).
Chloroceryle Cabanisii,	. . .	Reich. Handb. *Alced.* p. 27 (1851).
Alcedo Cabanisii,	. . .	Schl. Mus. Pays Bas. *Alced.* p. 5 (1863).

C. sexibus dissimilibus: dorso æneo-viridi: gulâ albâ: media: rostro robustiori: maculis alaribus distinctioribus.

Hab. in parte septentrionali-occidentali regionis Neotropicæ et in parte meridionali regionis Nearcticæ.

Above shining bronzy-green; forehead fuscous; wing-feathers brownish, white from the base, the exterior web edged with dull green, both webs conspicuously spotted with white, more especially on the secundaries; tail-feathers white at the base, as also one or two spots towards the apex, the two middle feathers entirely green; throat, cheeks, and a collar round the neck, pure white; lower part of the throat and upper part of the breast deep rufous; a line extending from the chin down the sides of the neck green; flanks white, plentifully washed with green; abdomen white; bill black; feet red; eyes hazel. Total length 8.5 inches, of bill from front 1.6, from gape 2, wing 3.4, tail 3, tarsus 0.3, middle toe 0.5, hind toe 0.3.

The female has a green band across the chest instead of the rufous colouring of the male.

Hab. Southern United States: Texas, Colorado River (*Coues*), Rio Grande (*Dresser*). Central America: Mexico, Jalapa (*De Oca*), Vera Cruz, Orizaba (*Botteri*), Cordova (*Sallé*), Guatemala, Old River, Belize (*Leyland*), Dueñas, San Geronimo (*Salvin*), Honduras, Lake of Yojoa (*Taylor*), Costa Rica, San José, San Carlos (*Carmiol*), Catargo (*J. Cooper*), Veragua, Panama (*McLeannan*), Chépo, Calovevora (*Arcé*), David (*Bridges*). Western South America: Ecuador, Babahoyo, Esmeraldas (*Fraser*), Peru, Tambo Valley (*Whitely*).

It is difficult to say whether the present bird should be regarded as a distinct species or as only a larger race of the well-known *C. americana*. The characteristics separating it from the last-named species are its larger-size, stouter bill, and the greater developement

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Additional References:—*Ceryle Cabanisi*, Bonap. Consp. Gen. Av. I, p. 160 (1850), Salvin, P.Z.S. 1867, p. 152, Sclater and Salv. P.Z.S. 1867, p. 280. *Chloroceryle Cabanisi*, Cab. and Heine, Mus. Hein. th. II, p. 148 (1860), Sclater, Cat. Am. Birds, p. 265 (1862). *Ceryle americana*, Sitgr. Rep. Exp. Zuni and Col. Rivers, p. 65 (1852), Cassin, Birds of Cal. p. 255 (1856), Baird, Cat. Am. Birds, p. 159, pl. vii (1860), Sclater, P.Z.S. 1856, pp. 139, 286, id. P.Z.S. 1858, p. 358, id. P.Z.S. 1859, p. 367, id. P.Z.S. 1860, pp. 272, 286, Sclater and Salv. P.Z.S. 1864, p. 363, id. Ibis, 1859, p. 131, Moore, P.Z.S. 1859, p. 53, Taylor, Ibis, 1860, p. 117, Dresser, Ibis, 1865, p. 472, Coues, Ibis, 1866, p. 263, Lawr. Ann. Lyc. New York, vii., p 290; id. Ann. Lyc. 1868, p. 118.

of the white spots on the wing-feathers. Its geographical range is confined to the southern portion of the United States, the whole of Central America, and the western portion of South America, the southernmost locality yet recorded being the Tambo Valley, Peru, whence specimens have been lately sent by Mr. H. Whitely, junr., a young and energetic naturalist, who is at present engaged in exploring that part of the country.

Through the kindness of Dr. P. L. Sclater, I have had free access to his collection, and have therefore been able to examine the specimens mentioned in his catalogue, while Mr. Salvin has placed at my service the whole of his fine series of American Kingfishers, thus enabling me to verify the correctness of the geographical distribution of this species by an actual examination of specimens from most of the above-mentioned localities. Mr. Dresser also very kindly lent me the specimens collected by him in Texas; and there is no doubt but that they are referable to the present bird. Some difficulty may be experienced in determining the species from young examples, as I think all Kingfishers are a long time gaining their fully adult size and plumage. The length of the wing is the best guide, I think, but old birds are easily distinguished by their larger and more robust size.

As the type of the present species came from Peru, I have thought it best to figure a pair from that country. The birds in the accompanying plate are drawn from two very fine specimens procured on the 10th of October, 1867, in the Tambo Valley, by Mr. H. Whitely, junr. The description and measurements are also taken from these birds, which are both in my own collection.

CERYLE AMERICANA.

CERYLE AMERICANA.

(BRAZILIAN GREEN KINGFISHER.)

Alcedo americana	Gm. Syst. Nat. I, p. 451 (1788).
Ceryle americana	Boie, Isis, 1828, p. 316.
Chloroceryle americana . . .	Reich. Handb. *Alced.* p. 27, t. ccccxiii, fig. 3112-3 (1851).
Alcedo brasiliensis	Gm. Syst. Nat. I, p. 450 (1788).
Alcedo viridis	Vieill. Nouv. Dict. d'Hist. Nat. XIX, p. 413 (1818).
Chloroceryle chalcites	Reich. Handb. *Alced.* p. 28, t. ccccxv, fig. 3120-21 (1851).
Martin-pecheur vert et blanc de Cayenne .	Buff. Pl. Enl. 591.
Martin-pescador verde obscuro . .	Azara, Apunt. No. 421.

C. sexibus dissimilibus: dorso æneo viridi: gulâ albâ: minor: rostro tenuiori: maculis alaribus minus distinctis.

Hab. in regione Neotropicâ.

Male. Above, bronzy-green; sides and back of the neck white, forming a collar round the latter; quills black spotted with white, the secondaries tipped with the same colour, their inner web also being white at the base; tail bronzy-green above, black beneath, all the feathers being white at the base and also spotted with white on the inner web; throat white; breast rufous; abdomen white, flanks largely spotted with green; bill and feet black. Total length 6·8 inches, of bill from front 1·6, from gape 2·0, wing 3·0, tail 2·3.

Female. Similar to the male, but instead of the red chest has a band of green, below which is another irregular band of green extending down on to the flanks on both sides; the under surface of the body is also tinged with fulvous.

Additional references.—*Alcedo americana*, Lath. Ind. Orn. I, p. 258 (1790), Less. Traitè d'Orn. p. 242 (1831), Max, Beitr. Naturg. Bras. IV, p. 17 (1832), Darw. Voy. Beagle, p. 162 (1839), Hartl. Ind. Azar. p. 26 (1847), Cab. Schomb. Reis. in Guian. III, p. 704 (1848), Schl. Mus. Pays Bas, *Alced.* p. 5 (1863). *Ceryle americana*, Gould, Voy. Beagle, Birds, p. 42 (1841), Gray, Gen. of Birds, I, p. 82 (1846), id. Cat. Fiss. Brit. Mus. p. 60 (1848), Bonap. Consp. Gen. Av. I, p. 160 (1850), Cass. Cat. Halc. Phil. Mus. p. 5 (1852), Licht. Nomencl. Av. p. 27 (1854), Sclater, P. Z. S. 1855, p. 136, Pelz. Sitz. Acad. Wien, 1856, p. 515, Scl. P. Z. S. 1856, p. 139, Léot. Ois. de Trinid. p. 112 (1866), Scl. and Salv. P. Z. S. 1862, p. 192, et 1867, pp. 581, 978, et. 1868, p. 628, Pelz. Orn. Bras. p. 23 (1868), Gray, Hand-list of B. p. 97 (1869). *Chloroceryle americana*, Bonap. Consp. Vol. Anis. p. 10 (1854), Burm. Th. Bras. II, p. 407 (1856), Cab. and Heine, Mus. Hein. th. II, p. 147 (1860) Burm. Reis. La Plata III, p. 447 (1861), Scl. Cat. Am. Birds, p. 265 (1862). *Alcedo viridis*, Bon. et Vieill. Enc. Meth. I, p. 397 (1823). *Alcedo brasiliensis*, Bon. et Vieill. Enc. Meth. I, p. 293 (1823). *Chloroceryle chalcites*, Burm. Th. Bras. II, p. 408, note (1856).

Hab. New Granada, Bogotá (*mus. P. L. Sclater*). Trinidad (*Lockwood*). Venezuela, San Esteban (*Goering*). Tobago (*Kirk*). Guiana, British Guiana (*Schomburgk*), Cayenne (*mus. Berol.*). Amazonia, Para, E. Tocantins, South Bank of the Amazons (*Wallace*), Borba (*Natterer*), Pebas (*Hauxwell*), Lower Ucayali (*Bartlett*), Santa Cruz, Huallaga River (*Bartlett*). Brazil (*Wied, Burmeister*), Rio Janeiro, Sapetiba, Rivers Pinheiros and Piraqué, Registo do Sal, Taixera, Taipa, Ypanema, Iraunra, Goiaz, Cuyaba, Rio Guaporé, Mato-grosso (*Natterer*). Argentine Republic, Conchitas (*Hudson*). Parana (*Burmeister*).

This is the commonest species of American Kingfisher, and is widely distributed on the eastern side of South America; on the western and also to the northward above Panama, it is represented by *Ceryle cabanisi*. The notes subjoined are all the details I have been able to find respecting its habits.

Mr. Darwin, in his "Naturalist's Voyage" (*l.c.*), speaking of the birds of the Rio Parana, notices the present species, and says:—

"It has a longer tail than the European species, and hence does not sit in so stiff and upright a position. Its flight, also, instead of being direct and rapid like the course of an arrow, is weak and undulatory as among the soft-billed birds. It utters a low note like the clicking together of two small stones."

My friend Mr. W. Jesse also informs me that the little Green Kingfisher of Brazil has a curious way of jerking his tail upwards, and the front figure in the accompanying plate is drawn from a sketch he gave me.

The late Prince Maximilian of Neu-Wied has recorded the following details respecting the present bird:—

"This small Kingfisher is the commonest and most numerous of all the birds of this family observed by me in the Brazils. It lives everywhere in company with *Alcedo amazona*, is very similar in form, habits, and colour, but is less shy, visiting even small puddles and marshy ponds near habitations, where small fish have been left behind. It is most often observed on the shores of rivers, on the banks of small forest brooks, where, in the dark over-shadowed cavities, it sits on a root growing across, or a small twig, jerking its tail and often plunging suddenly into the water. In the great heat of the day it is fond of washing in shallow water."

"In disposition it is not shy, and I have often approached close to one; on taking flight they dart away like a bullet, but soon settle again, often at the same time erecting their crest and uttering their cry. This bird differs from our European Kingfisher chiefly in the longer tail, which it often raises up and down. Its food consists of small fishes: insects I have never found in the stomach. The nest is in the hole of a bank which is tunnelled by the bird itself, and the eggs are said to be white. The fishermen take the young birds out of the nest, and use them for baiting their hooks."

My descriptions and the figures in the plate are from Bahia specimens.

CERYLE INDA. ♂ & ♀.

CERYLE INDA.

(RUFOUS AND GREEN KINGFISHER).

Alcedo inda, ...	Linn. Syst. Nat. I, p. 179 (1766).
Ceryle inda	Gray, Gen. of Birds, I, p. 82 (c. 1844).
Chloroceryle inda	Sclater, Cat. Am. Birds, p. 265 (1862).
Alcedo viridirufa, ...	Bodd. Tabl. Pl. Enl. p. 36 (1783).
Ceryle viridirufa, ...	Gray, Gen. of Birds, I, p. 82 (c. 1844).
Chloroceryle viridirufa	Cab. & Heine, Mus. Hein. th. II. p. 146 (1860).
Alcedo bicolor	Gm. Syst. Nat. I, p. 454 (1788).
Ceryle bicolor	Boie, Isis, 1828, p. 316.
Chloroceryle bicolor, ...	Reich. Handb. *Alced.* p. 29, t. ccccxiv, fig. 3118—19 (1851)
Amazonis bicolor, ...	Bonap. Consp. Vol. Anis. p. 10 (1854).
Alcedo indica, ...	Drap. Dict. Class. d' Hist. Nat. x, p. 231 (1826).
Spotted Kingfisher, ...	Edw. Gleanings vii, pl. 335 (1764).
Martin-pecheur vert et roux de Cayenne, .	Buff. Pl. Enl. 592.
Sakaika, of the Natives of British Guiana (*Schomburgk*).	

C. sexibus differentibus: dorso æneo-viridi: gulâ rufescente: major: abdomine et crisso intensè rufis. *Fem.* à torque pectorali viridi albo mixtâ distinguenda.

Hab. in Regione Neotropicâ.

Additional references.—*Alcedo inda*, Lath. Ind. Orn. I, p. 259 (1790), Bon. et Vieill. Encl. Meth. I, p, 397 (1823), Shaw and Nodd. Nat. Misc. xxi, pl. 889 (1809). *Ceryle inda*, Cass. Cat. Halc. Phil. Mus. p. 3 (1852), id. Proc. Phil. Acad. 1860, p. 133, Lawr. Ann. Lyc. N. Y. vii, p. 290 (1860), id. Ann. Lyc N. Y. viii, p. 183 (1865), Scl. and Salv. P. Z. S. 1864, p. 363, id. P. Z. S. 1867, p. 581. *Alcedo viridirufa*, Schl. Mus. Pays Bas, *Alced.* p. 5 (1863) *Ceryle viridirufa*, Gray, Cat. Fiss. Brit. Mus. p. 61 (1848). *Alcedo bicolor*, Lath. Ind. Orn. I, p. 258 (1790), Bon. et Vieill. Enc. Meth. I, p. 290 (1823), Less. Traité d'Orn. p. 242 (1831), Wied, Beitr. Naturg. Bras. iv, p. 23 (1832), Cab. in Schomb. Reis. Guian. III, p. 704 (1848). *Ceryle bicolor*, Kaup, Fam. *Alced.* p. 8 (1848), Bonap. Consp. Gen. Av. I, p. 160 (1850), Licht. Nomencl. Av. p. 27 (1854), Pelz. Sitz. Akad. Wien, 1856, p. 515, id. Orn. Bras. p. 23 (1868). *Chloroceryle bicolor*, Burm. Th. Bras. II, p. 406 (1856). *Amazonis bicolor*, Bonap. Bull. Linn. Soc. Norm. II, p. 37 (1857).

Male. Above bronzy-green; a streak from the nostral to the eye, rufous; lower part of the back and the exterior web of the wing and tail feathers minutely spotted with white; interior web of the same irregularly half-banded with white; entire under-surface chesnut-rufous, paler on the chin and sides of the neck; bill black; feet red. Total length 8.8 inches, of bill from front 1.9, from gape 2.5, wing 3.9, tail 2.6, tarsus 0.07, middle toe 0.6, hind toe 0.05.

Female. Similar to the male, but has the breast crossed by a transverse belt, green mixed with white.

Hab. Central America; Nicaragua, Greytown (*Holland*), Veragua, Panama (*Mc'Leannan*), Turbo (*Wood*), Guiana: British Guiana (*Schomburgk*), Cayenne (*Mus. P. L. Sclater*). Amazonia: Mexiana, Para (*Wallace*), Mammoneira, Guadamor, Matrincham, (*Natterer*), Huallaga River, Peruvian Amazons (*E. Bartlett*). Brazil: Cuyaba (*Natterer*), Bahia (*Wucherer, mus. O. Salvin*). Island of Santa Catherina (*mus. Dresd.*)

This fine species along with *Ceryle superciliosa* forms the subgenus *Amazonis* of Reichenbach, which was considered to be a distinct genus by Bonaparte. This is only one out of many instances in which the last-named Ornithologist admitted genera solely on the ground of a distinct style of coloration and not from any real structural difference. The two species included by him in this genus do not present any variation of form from that of the other American Green Kingfishers, and are only remarkable in so much that the under surface of the body is entirely rufous.

Mr. C. J. Wood who obtained this species during the U. S. Isthmus of Darien Expedition observes, that "one specimen was seen in a salt water marsh near the village of Turbo, very quiet and easily approached."

I am indebted to Mr. Edward Bartlett, whose energetic researches in Eastern Peru have contributed so much to increase our knowledge of the Avi-fauna of that almost inaccessible part of South America, for the following very interesting note on the habits of this species.

"The *Ceryle inda* is very rare on the waters of the Peruvian Amazon, or River Maranon. During the four years I resided there I only obtained two specimens, which I shot in a small brook near Santa Cruz, on the Huallaga River. They are not found on the open waters, but in the densely-covered small streams. The nest is in holes in the banks as in the case of other Kingfishers. This species is extremely shy and difficult to obtain."

The figures in the plate and the descriptions are from a fine pair in my own collection from Demerara.

CERYLE SUPERCILIOSA, ♂ & ♀.

CERYLE SUPERCILIOSA.

(LEAST GREEN KINGFISHER.)

Alcedo superciliosa, . . Linn. Syst. Nat. I, p. 179 (1766).
Ceryle „ . . Gray, Gen. of Birds, I, p. 82 (c. 1844).
Chloroceryle „ . . Reich. Handb. *Alced.* p. 28, t.ccccxv, fig. 3122-24 (1851).
Amazonis „ . . Bonap. Cons. Vol. Anis. p. 10 (1854).
Martin-pecheur petit vert de Cayenne, Buff. Pl. Enl. 756.

C. supra nitentè-viridis, subtus rufa: valdè minor: abdomine medio crissoque albis. Fem. à vittâ pectorali viridi distinguenda.

Hab. in parte septentrionali regionis Neotropicæ.

Above shining green, forehead and wing-coverts spotted with ochre; a spot on each side of the head at the base of the bill, extending backwards over the eye pale reddish; the neck encircled with a band of white feathers, tipped with reddish; wing-feathers blackish, the secundaries having the outer web edged with green spotted with ochre, and the basal half of the inner web pale reddish; under surface deep red, becoming gradually paler on the throat and chin; abdomen and under tail-coverts pure white; bill black, the basal portion of the lower mandible yellowish; feet reddish; eye dark brown. Total length 5 inches, of bill from front 1, from gape 1.3, wing 2.2, tail 1.6, tarsus 0.2, middle toe 0.4, hind toe .2. The female differs from the male in having a broad pectoral band composed of green feathers edged with white.

Hab. Central America, Mexico, Tuxtla (*Boucard*), Playa Vicente, Oaxaca (*Boucard*), Guatemala, Lake Peten (*Leyland*) Choctum, Vera Paz, Rio Samala, Belize River (*Salvin*), Costa Rica (*Ellendorf*), Veragua, Panama (*McLeannan*), Turbo (*Wood*). Guiana: British Guiana (*Schomburgk*), Surinam (*Mus. Phil.*), Cayenne (*Mus. Phil.*), Trinidad (*Léotaud*), Amazonia, Mexiana (*Wallace*), Caiçara, Engenho do Cap, Gama, Matagrosso, Borba, Cocuy, Marabitanas, Rio Amajau (*Natterer*), Pebas (*Haurwell*), Chyavetas, E. Peru (*Bartlett*).

The present is one of the oldest known species of Kingfishers, being figured as long ago as 1758 by Edwards. For such a small bird it enjoys a very wide geographical range the highest locality yet recorded being S. Andres Tuxtla, in the State of Vera Cruz, where it was collected by Boucard.

Additional References.—*Alcedo superciliosa*, Lath. Ind. Orn. I. p. 259 (1790): Bon. and Vieill. Encl. Meth. I. p. 287 (1823), Less. Tr. d'Orn. p. 244 (1831), Cab. Schomb. Reis. Guian. III. p. 704 (1848); Schl. Mus. Pays Bas. *Alced.* p. 6 (1863); *Ceryle superciliosa*, Gray, Cat. Fiss. Brit. Mus. p. 62 (1848); Bonap. Cons. Gen. Av. I. p. 160 (1850); Cass. Cat. Halc. Phil. Mus. p. 3 (1852); Léot. Ois. de Trin. p. 114 (1866); Pelz. Orn. Bras. p. 24 (1868); *Chloroceryle superciliosa*, Burm. Th. Bras. II. p. 408, note; Cab. and Heine, Mus. Hein. th. II. p. 146 (1860); Sclater, Cat. Am. Birds, p. 265 (1862).

Mr. Salvin observed this species in the Pacific coast-region of Guatemala, frequenting the forest swamps as well as the large rivers. He has also favoured me with a note to the effect that he 'found it on the banks of the Belize River, and generally throughout the lowland coast region of Guatemala.'

The present species was also met with at Turbo, by Messrs. H. and J. C. Wood, who accompanied the U.S. Expedition to the Isthmus of Darien, and is recorded by Mr. Cassin.[c] Mr. C. J. Wood remarks:—

"In a salt-water marsh, almost in the village of Turbo, one specimen only was seen perched in a bush, which was obtained without dificulty, being very unsuspicious."

In the Guianas it is apparently more common, and Schomburgk says *(l. c.)*: "This is the smallest species found in British Guiana. I met with it often near the coast in the neighbourhood of stagnant pools and ditches, as well as in rivers. It feeds on small fish." Mr. P. L. Sclater has a specimen in his collection from Trinidad, in which island says Leotaud *(l. c.)*, it is 'a resident, not very common. It is observed at the places where the sea joins the fresh water. There is nothing particular in its habits; it seems, however, to be less shy than the other species.'

PELARGOPSIS MELANORYNCHA.

PELARGOPSIS MELANORHYNCHA.

(CREAM-COLOURED STORK-BILLED KINGFISHER.)

Alcedo melanorhyncha	Temm. Pl. Col 391 (1826).
Halcyon melanorhyncha	Gray, Gen. of B. I, p. 79 (1846).
Halcyon melanorhyncha	Reich. Handb. *Alced.* p. 18, t. cccxcix, fig. 3074 (1851).
Rhamphalcyon melanorhyncha	Bonap. Consp. Vol. Anis. p. 9 (1854).
Pelargopsis melanorhyncha	Sharpe, P.Z.S. 1870, p. 62.

P. rostro nigro: pileo albescente, fronte griseo: interscapulio, dorso postico et uropygio cum corpore subtus diluté ochraceis; scapularibus, cum alis et caudâ sordidè viridibus.

Hab. in insulis "Celebes" et "Sula" dictis.

Entire body cream-colour, a little deeper on the throat and approaching to pale orange on the abdomen and under tail-coverts; forehead dusky-grey, the base of a few feathers on the crown also slightly shewing this colour; cheeks and ear-coverts more decided dusky-grey, the feathers narrowly edged or washed with cream-colour; middle of the back, scapularies, and wing-coverts brownish, washed with dull green, the latter narrowly edged with cream-colour at the tip; quills dark brown, the inner web white at the base, the basal half of the outer web of the primaries and the whole of the outer web of the secondaries dusky-green; tail dusky-green above, dark brown beneath; bill black; feet dusky; eyes dark brown. Total length 14 inches, of bill from front 3.3, from gape 3.5, wing 5.9, tail 3·7, tarsus 0·45, middle toe 1.1, hind toe 0.5.

Hab. Celebes (*Wallace*), Sula Islands (*Wallace*).

Those systematists, who follow in the tracks of the late Prince Bonaparte, and who consider any striking variation in the style of plumage as of primary importance, would have no scruple in separating the present bird as generically distinct from the other species of the genus *Pelargopsis*. I have indeed been told that it ought to be generically separated, but I cannot see the propriety of such a step, in the entire absence, so far as I can determine of structural peculiarities whence generic characters can be selected.

Mr. Wallace has very kindly given me the following note on this bird made by him during his residence in Celebes:—"Bill black; inside of the bill and soles of the feet orange; feet above black; eats fish, shrimps, &c."

The figure in the plate as well as the description and measurements are taken from a fine male from Celebes presented to my collection by my friend Mr. W. T. Fraser.

Additional references.—*Alcedo melanorhyncha*, Schl. Mus. Pays Bas, *Alced.* p. 15 (1863); id. Vog. Ned. Ind. *Alced.* pp. 10, 47, pl. 2 (1864). *Halcyon melanorhyncha*, Bonap. Consp. Gen. Av. I. p. 155 (1850); Cass. Halc. Phil. Mus. p. 10 (1852); Wall. Ibis, 1860, p. 142; id. P.Z.S. 1862, pp. 335, 338.

PELARGOPSIS AMAUROPTERA.

PELARGOPSIS AMAUROPTERA.

(BROWN-SHOULDERED STORK-BILLED KINGFISHER).

Halcyon amauroptera	Pears. Journ. As. Soc. Beng. 1841, p. 635.
Ramphalcyon amauroptera	Reich. Handb. *Alced.* p. 17, t. ccccIxxxi., fig. 3407 (1851).
Pelargopsis amauroptera	Cab. and Heine, Mus. Hein. th. II, p. 157 (1860).

P. rostro rubro: scapularibus brunneis.

Hab. in regione Indo-Malayanâ.

Entire head, neck, and under-surface of the body yellowish cinnamon; upper part of the back, scapularies, and wing-coverts, chocolate-brown; entire back and rump silvery-cobalt; quills chocolate-brown, the inner web light cinnamon at the base; tail-coverts and tail chocolate-brown, darker underneath; bill and feet sealing-wax red. Total length 13.0 inches, of bill from front 3.0, from gape 3.5, wing 5.8, tail 4.0, tarsus 0.5, middle toe 1.0, hind toe 0.5.

Hab. Bengal (Sundurbuns especially); Arakan; Tenasserim provinces; very abundant along the eastern coast of the Bay of Bengal, not yet observed on the western. Not rare in the vicinity of Calcutta (*Blyth*), Assam (*mus. H. B. Tristram*).

This abnormally-coloured *Pelargopsis* is one of the most clearly characterized of all the species of Stork-billed Kingfishers, and cannot be confounded with any other member of the family. Notwithstanding that the bird is not rare in the localities which it affects, there are very few collections in Europe which possess specimens. Little is known of its habits but they are doubtless similar to the other species of *Pelargopsis*.

Mr. Jerdon gives us the following observations in the "Birds of India":—

"This is a handsomely coloured species, the beautiful pale sky-blue contrasting so effectively with the brown and sober tints of the rest of the plumage. It is only found within our limits, in Bengal, being not rare about Calcutta, though more common in the Sunderbuns, where I have frequently seen it; and it is more abundant still to the East, in Arrakan and Tenasserin. It does not appear to ascend rivers, in Bengal, far beyond the reach of the tide. It is a noisy species, and has a very loud, harsh, and grating cry. It feeds chiefly on fishes, making a violent plunge into the water."

Additional references.—*Halcyon amauroptera*, Blyth, Ann. Nat. Hist. xii, p. 94 (1843); Gray, Gen. of B. I, p. 79 (1846); Blyth, Cat. B. Mus. As. Soc. Beng., p. 313 (1849); Bonap. Consp. Gen. Av. I, p. 155 (1850); Cass. Cat. Halc. Phil. Mus. p. 10 (1852); Horsf. and Moore, Cat. B. Mus. E. I. Co. I, p. 124 (1854); Jerdon, Birds of Ind. I, p. 224 (1862); Blyth, Ibis, 1866, p. 347. *Ramphalcyon amauroptera*, Bonap. Consp. Vol. Anis., p. 10 (1854). *Pelargopsis amauroptera*, Sharpe, P.Z.S., 1870, p.

Some Ornithologists have considered their present species to be only a variety of *Halcyon gurial*, an identification manifestly untenable, for besides the entire difference in coloration, both Mr. Blyth and Dr. Jerdon state that the notes of the two species are entirely different.

I am indebted to Dr. H. B. Tristram for the loan of the specimen from which the description and figure in the present work are taken.

PELARGOPSIS LEUCOCEPHALA.

PELARGOPSIS LEUCOCEPHALA.

(BORNEAN STORK-BILLED KINGFISHER.)

Martin-pêcheur de Java . . . . . Buff. Pl. Enl. 757.
Alcedo javana . . . . . Bodd, Tabl. Pl. Enl. p. 757 (1813, *ex Buff.*)
White-headed kingfisher . . . . . Lath. Syn. I. pt. II, p. 678 (1782).
Alcedo leucocephala . . . . . Gen. Syst. Nat. I, p. 456 (1788, *ex Lath*).
Halcyon leucocephala . . . . . Steph., Gen. Zool. viii, p. 100 (1826).
Pelargopsis leucocephala . . . . . Sharpe, P.Z.S., 1870, p.
Alcedo javanica . . . . . Shaw, Gen. Zool. viii. p. 67 (1811).
Halcyon javana . . . . . Gray, Gen. of B. I, p. 79 (1846).
Halcyon javana . . . . . (*pt.*), Pelz. Voy. Nov. Vög., p. 49 (1865).
Bakaka and *Rajah udong* of the Burmese (*Motley*).

P. rostro rubro: capite haud pileato, collo postico concolori: minor: suprâ lætissimè cyanea.

Hab. in insulâ "Borneo" dictâ.

Head and back of the neck pale ochre; back of the neck richer ochre; upper part of the back and scapularies ultramarine with a faint greenish lustre; lower part of the back extremely rich cobalt; wing-coverts rich ultramarine; quills dark blackish-brown, the inner web pale ochre at the base, the basal half of the outer web of the primaries and the whole of the outer web of the secondaries very rich ultramarine; tail rich ultramarine above, black beneath; throat and ckeeks pale ochre; rest of the under surface of the body rich ochre, a few of the flanks washed with ultramarine; bill dark sealing-wax red; feet dark red. Total length 13.0 inches, of bill from front 3.0, from gape 3.3, wing 5.8, tail 3.3, tarsus 0.45, middle toe 0.1, hind toe 0.45.

Hab. Borneo, Sarawak (*Wallace*), Banjermassing (*Motley*), Labuan (*Motley*).

The old authors were so notably inaccurate in the localities they assigned to the various species of birds described by them, that we ought not to be surprised when it becomes evident that the Stork-billed Kingfisher stated by them to be from Java, appears on apparently unquestionable grounds not to inhabit that island, but to be found only in Borneo. This fact was first pointed out by Lord Walden (P.Z.S. 1866, p. 553) and my own researches confirm his Lordship's decision. So far as I can see the Bornean Stork-billed Kingfisher appears to be a distinct species, but a comparison of the plate given by me with the figure of the *Martin-pecheur de Java* given by Buffon in the "Planches Enluminées" will shew at once that the two birds figured are identical. The figure in the present work is

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Additional references.—*Alcedo leucocephala*, Lath. Ind. Orn. I, p. 48 (1790); Bonn. et Vieill. Enc. Meth. I, p. 288 (1823); Shaw and Nodd. Nat. Misc. pl. 793 (1807). *Halcyon leucocephala*, Bonap. Consp. Gen. Av. I, p. 154 (1850); Sclater, P.Z.S., 1863, p. 213.

taken from a fine adult male obtained at Sarawak by Mr. Wallace, and now in Lord Walden's collection. Acting, therefore, on these identifications I have superseded the name *javana* of Boddaert, which is manifestly inapplicable, by the next in order of priority, *leucocephala* of Gmelin, Looking at the accompanying figure the term "White-headed Kingfisher" would seem out of place, but in specimens where the plumage is somewhat worn, the feathers on the head appear whitish, and I have seen an example of this fact in a specimen collected by the late Mr. Motley at Banjermassing and lent to me by the Rev. H. B. Tristram, in whose collection the bird now remains.

The only original observations on its habits are those of Mr. Motley (*l.c.*). He observes:—

"This is one of our commonest Kingfishers, and to be seen everywhere, both in fresh and brackish water, though I think rarely where the water is truly salt. It usually perches on rather high exposed branches, and is wild and not easy to approach, flying off with a loud chatter, precisely resembling its name *Bakaka*. The Malay races are particularly happy in onomotopeias of this kind. It is also called *Rajah udong* (king of the shrimps)—a true King Stork, I suppose."

The description and figure are from Lord Walden's Sarawak specimen.

PELARGOPSIS GOULDI.

PELARGOPSIS GOULDI.

(GOULD'S STORK-BILLED KINGFISHER).

Pelargopsis gouldi. . . . . Sharpe, P Z.S., 1870, p.

P. rostro rubro: scapularibus viridi-cyaneis: capite haud pileato, collo postico concolori: major: suprà viridi-cyanea.

Hab. in insulis Philippinis.

Whole head and neck, and the whole of the under surface of the body rich ochre; upper part of the back, scapularies, wing-coverts, upper tail-coverts and upper surface of the tail green, slightly inclining to blue on the latter; whole of the back and rump silvery cobalt; quills blackish, the inner web pale orange at the base, the exterior web of the primaries and nearly the whole of both webs of the secondaries bright cobalt; bill rich vermillion; feet dark red. Total length 13 inches, of bill from front 3.2, from gape 3.6, wing 6.0, tail 3.5, tarsus 0.5, middle toe 1.0, hind toe 0.5.

Hab. Manilla (*Cuming, mus. J. Gould*).

This species must not be confounded with the Bornean *P. leucocephala*, from which it may be distinguished by its larger size, and by the total absence of the blue on the upper surface so very distinct in the last named bird. All the parts which in *P. leucocephala* are bright ultramarine are in the present species vivid green.

Besides the specimen in Mr. Gould's collection, from which I have taken the description, and from which the plate is drawn, the Derby Museum possesses another collected in Manilla by the late Hugh Cuming. I am indebted to Mr. Gould for the loan of his beautiful specimen, which is also from Manilla, as it enables me to give a figure of the type

PELARGOPSIS FRASERI.

PELARGOPSIS FRASERI.

(FRASER'S STORK-BILLED KINGFISHER.)

Pelargopsis Fraseri . .	Sharpe, P. Z. S. 1870, p. 65.
Ispida capitis bonæ spei .	Briss. Orn. IV, p. 488.
Alcedo capensis . . .	Linn. Syst. Nat. I, p. 180 (1766, *ex. Briss*); Bonn. et Vieill. Enc. Méth. I. p. 285 (1823).
Halcyon capensis . . .	Eyton, P. Z. S. 1839, p. 101. Bonap. Consp. Gen. Av. I. p. 154 (1850);
Ramphalcyon javana . .	Reich. Handb. *Alced.* p. 7, t. cccxcviii. b. fig. 3406 (1851, *nec. Bodd.*).
Halcyon javana . . .	Cab. & Heine, Mus. Hein. th. II. p. 156 (1860, *nec. Bodd.*); (pt.) Pelz. Reise d. Nov. Vög. p. 49 (1865).
Halcyon javanica . . .	Cass. Cat. Halc. Phil. Mus. p. 11 (1852, *nec. Shaw*).
Alcedo leucocephala . .	Horsf. Trans. Linn. Soc. XIII, p. 174 (1822, *nec Gm.*); Raffl. Trans. Linn. Soc. XIII, p. 293 (1822).
Halcyon leucocephalus . .	Blyth, Cat. Birds Mus. As. Soc. Beng. p. 46 (1849); Bonap. Consp. Gen. Av. I, p. 154 (1850); Horsf. & Moore, Cat. Birds Mus. E. I. Co. I. p. 123 (1854, pt.); Moore, P. Z. S. 1854, p. 268.

Burong-Kaka of the natives of the Malay peninsula (*Eyton*).
Tengke-Buto of the Javans (*Horsfield*).
Bang-Kaka of the natives of Sumatra (*Raffles*).

P. rostro rubro: scapularibus viridi-cyaneis: capite indistinctè pileato, ochrascenti cinereo.

Hab. in sub-regione Indo-Malayanâ.

Head indistinctly capped, ashy brown, strongly washed with pale ochre; space between the bill and the eye, cheeks, and ear-coverts more decidedly ashy grey; sides and back of the neck ochre; upper part of the back and scapularies indigo-blue, with more or less of a greenish tinge; whole of the back rich cobalt; wing-coverts blue, with a slight greenish lustre; quills pale brown, the inner web light ochre at the base, the outer web, especially of the secondaries, indigo; tail indigo above, black beneath; under surface of the body ochre, tinged with whitish on the throat; bill dark sealing-wax red; feet dark red. Total length 14 inches, of bill from front 3·3, from gape 3·7, wing 6·2, tail 3·8, tarsus 0·45, middle toe 1, hind toe 0·45.

Hab. Java (*Horsfield, Wallace*), Malacca (*mus. R. B. S.*), Penang (*Cantor*; *mus. R. B. S.*), Sumatra (*Raffles, Wallace*).

In my paper on the genus *Pelargopsis* (*l.c.*), I proposed the name of Mr. W. T. Fraser for the present species instead of retaining the one which seems by right to belong to the

bird, viz., *Alcedo capensis* of Linnæus, inasmuch as this name is founded on the "*Ispida capitis bonæ spei*" of Brisson, and if perpetuated could only lend additional confusion as to the correct locality of the species.

The present bird is nearly allied to the Bornean *P. leucocephala;* but this latter species, so far as I can at present determine, never puts on a cap, which is always more or less distinct in the Javan bird. In addition to this character, *P. fraseri* is always much more green in tint.

It is very seldom that we meet with a specimen of *P. Fraseri* with anything like a *distinct* cap. Mr. Wallace's collection, however, contains a specimen obtained by himself in Eastern Java which has the cap very distinct, like the bird figured by Professor Reichenbach (*l. c.*). The species, however, differs from *P. burmanica* by always having an admixture of ochre, sometimes very strongly marked in the feathers of the head.

The following account of the bird's habits is from the pen of the Vicomte de Bocarmè and is published by Professor Schlegel (Mus. Pays Bas, *Alced.*, p. 13) :—

"The Javan chiefs have ordinarily, within the limits of their principal residence, ponds filled with divers species of choice fish, to which are thrown daily nests full of the chrysalides of ants. These nests are combs of a light paste which swim on the top of the water and offer to the fish a very delicate morsel. They come immediately these are thrown in, and by the means of suction they very soon extract the chrysalides and larvæ which the holes contain. This great Kingfisher does not forget to visit these ponds, which he succeeds in depopulating entirely. He creates much more terror than the Otter (*Lutra leptonyx*), for a dog on guard keeps the latter away, but the bird appears each time that Morpheus holds his reign, that is to say very often. He also frequents rivers and marshes. Besides fish, he devours greedily the heaps of eggs that the fishermen lay in an oval lump of eight or ten lines in diameter, surrounded with pieces of grass ; a dish that the Javans themselves do not despise."

On the plate is figured a Sumatran specimen obtained by Mr. Wallace in that island, while the right-hand figure represents a Javan specimen preserved by Dr. Horsfield, and now in the Cambridge Museum.

The Sumatran race of *P. fraseri* is much smaller, the blues slightly more intense, but the bird appears to be not specifically separable.

PELARGOPSIS GURIAL.

(INDIAN STORK-BILLED KINGFISHER.)

Halcyon gurial	. .	Pears. Journ. As. Soc. Beng. 1841, p. 633 (descr. orig.); Blyth, Cat. Birds Mus. As. Soc. Beng. p. 47 (1849); Bonap. Consp. Gen. Av. I, p. 155 (1850); Irby, Ibis, 1861, p. 228; Blyth, Ibis, 1865, p. 30.
Ramphalcyon gurial	.	Reich. Handb. *Alced.* p. 16, t. ccccxxvi (1851).
Pelargopsis gurial	. .	Cab. & Heine, Mus. Hein. th. II, p. 156 (1860); Sharpe, P. Z. S. 1870, p. 66.
Halcyon capensis	. .	Jerd. Madr. Journ. 1840, p. 231; Blyth, Ann. Nat. Hist. XII. p. 94 (1843).
Halcyon brunniceps	. .	Jerd. Madr. Journ. 1844, p. 143.
Halcyon leucocephalus	.	(part.) Horsf. & Moore, Cat. Birds Mus. E. I. Co. p. 123 (1854).
Halcyon leucocephalus	.	Jerdon, Birds of India, I. p. 222 (1862); Day, Land of Perm. p. 460 (1863); Beav. Ibis, 1865, p. 407; Blyth, Ibis, 1866, p. 347.

Gurial of the Bengalese (Pearson).
Mala-poyma of the natives of Malabar (Jerdon).

P. rostro rubro; scapularibus viridi-cyaneis; capite distincte pileato, saturaté brunneo, haud cyaneo lavato.

Hab. in sub-regione Indicâ.

Head dark chocolate-brown; sides of the neck and a collar encircling the same pale ochre; upper portion of the back and scapularies dull green, rest of the back rich greenish cobalt; wing-coverts dull green with a faint blue lustre; quills black, the inner web yellowish white at the base, the outer edge of the whole of the feathers greenish blue; tail greenish blue above, black beneath; under surface of the body ochre, palest on the throat; bill very dark sealing-wax red; feet dull red. Total length 14 inches, of bill from front 3·1, from gape 3·7, wing 6·4, tail 3·6, tarsus 0·5, middle toe 1·1, hind toe 0·5.

Hab. All India, from the extreme south to Bengal and Ceylon; common in Malabar; rarely seen in the Carnatic and upon the table-land; occasionally found in Central India and the Northern Circars; most abundant in Bengal, but apparently not found, or rare, in the north-west (*Jerdon.*).

This Kingfisher is easily distinguished from all the other members of the genus by its distinct dark brown cap. In Assam and Nepal a race occurs which has a slightly lighter cap, but beyond this sub-species birds from all parts of India are identical.

"In Cochin," says Dr. Day (*l.c.*), "the strong as well as handsome Gurial Kingfisher is found near the ghauts; it is very wary, and its flight greatly resembles that of the *Alcedo bengalensis*."

The following observations, containing as they do, a summary of most of the notes that have been written on its habits by Indian Ornithologists, are taken from Dr. Jerdon's work on the "Birds of India" (*l.c.*):—

"Our bird is found along rivers, streams, and back waters; but only where tolerably well shaded by trees. It sits on a branch overhanging the water and pounces on fish, crabs, and occasionally frogs It has rather a peculiar call (*peer, peer, pur*) several times repeated. Lavard, however, calls it a loud harsh note, not unlike the cracking of castanets. It is said to build in hollow trees, or in holes in mud-walls. Mr. Smith, as quoted in Horsfield's Catalogue, says that he once observed a contest between a bird of this species and a Hawk of considerable size, in which the latter was worsted and obliged to leave his hold, from the effects of a severe blow which the other administered to him on the breast."

The description and figure are taken from a specimen in my collection from India, given me by my friend Mr. W. J. Williams.

PELARGOPSIS MALACCENSIS.

(MALACCA STORK-BILLED KINGFISHER.)

Pelargopsis malaccensis . . . . . Sharpe, P. Z. S. 1870, p. 67.

P. similis. *P. gurial* sed conspicuè minor: dorso postico lætè cyaneo: scapularibus saturate cyaneo-viridibus.

Hab. in peninsulâ Malaccensi.

Head dark brown; upper part of the body dark blue with scarcely any greenish tinge; lower part of the back and rump bright cobalt; upper tail-coverts blue like the back; quills black, washed and edged with blue; tail blue above, greyish black beneath; entire under surface of the body with a collar encircling the neck rich buff inclining to orange, especially on the flanks; bill deep coral-red blackish towards the tip; feet red. Total length 12 inches, of bill from front 3·2, from gape 3·5, wing 5·5, tail 2·3, tarsus 0·5, middle toe 0·1, hind toe 0·5.

Hab. Malacca (*Wallace; mus. R. B. S.*).

This species I provisionally separated in my paper on the genus *Pelargopsis* (*l.c.*), but since that time I have seen several specimens and am convinced that it is perfectly distinct. It belongs to the same group as *P. gurial* and *P. floresiana*, but differs from both by its small size. I do not, however, think it worth while to give a figure.

The description and measurements are from the type-specimen in my collection.

PELARGOPSIS BURMANICA.

PELARGOPSIS BURMANICA.

(BURMESE STORK-BILLED KINGFISHER).

Pelargopsis burmanica	Sharpe, P.Z.S. 1870, p.
Halcyon leucocephalus	Gould, P.Z.S. 1829, pp. 151, 152 (*nec* Gm.)
? Ramphalcyon capensis	Reich., Handb. *Alced.*, p. 16, t. cccxcix, fig. 3072-73 (1851).

P. rostro rubro: scapularibus viridi-cyaneis: capite distincte pileato, albescenti-cinereo, haud cyaneo lavato.

Hab. in plagâ Indo-sinensi subregionis Indo-Malayanæ.

Head, which is distinctly capped, clear albescent-grey; sides of the neck and a collar encircling the same very deep ochre; upper part of the back and scapularies dull green with a faint blue lustre here and there; whole of the back very rich cobalt; wing coverts greenish more distinctly washed with blue; quills brown, the inner web pale ochre at the base, the exterior web, especially of the secondaries, externally edged with bright blue; tail bright blue above, dark brown beneath; entire under surface very deep ochre; bill dark vermillion; feet dark red. Total length 14.0 inches, of bill from front 3.4, from gape 3.7, wing 6.0, tail 3.8, tarsus 0.5, middle toe 1.0, hind toe 0.5.

Hab. Andaman Islands (*Tytler*, *Beavan*), Burmah (*Blyth*), Siam (*Schomburgh*), Tenasserim Provinces (*Briggs*).

This is the bird spoken of by Mr. Blyth and other ornithologists as the Burmese race of *Halcyon gurial*, but until my recent examination of the genus its exact range had not been correctly made out. From all other brown-capped species of *Pelargopsis* the present species differs in the colour of the cap, which is albescent, and not brown as in its allies.

The range of *Pelargopsis burmanica*, as hitherto determined, seems to indicate that it is confined to the Indo-Chinese region. It is common in Burmah, and also met with in Siam, while I am of opinion that it is also found in the northern part of the Malayan peninsular. Colonel Tytler obtained it in the Andaman Islands, where he states it was "very abundant, frequenting the groves of mangroves which skirt the sea-shore."

I have doubtfully referred the birds figured by Reichenbach (*l.c.*) to the present species.

Additional references.—*Halcyon leucocephalus* (*nec* Gm.) Schomb. Ibis, 1864, p. 247; Beav. Ibis, 1866. p. 221; Walden, P.Z.S. 1866, p. 553; Beav. Ibis, 1867, p. 318; Horsf. & Moore, Cat. B. Mus. E. I. Co. I, p. 123 (1854, *pt.*)

His figures are generally difficult to identify, and as the locality of the birds delineated is said to be "South Africa," an examination of the specimens alone can solve the question correctly. The locality assigned is of course utterly incorrect.

The description and figure is taken from the type-specimen, lent me by Lord Walden, who received it in a collection from Tongu in Burmah.

PELARGOPSIS FLORESIANA.

PELARGOPSIS FLORESIANA.

(FLORES STORK-BILLED KINGFISHER).

Pelargopsis floresiana	Sharpe, P.Z.S., 1870, p.
Martin-pecheur du cap de Bonne Esperance .	Buff., Pl. Enl. 590.
Halcyon capensis	Swains, Classif. of B. II., p. 335 (1837, ex Buff. *nec Linn*.
Halcyon leucocephalus	Wall, P.Z.S., 1863, p. 483 (*nec Gm*).

P. rostro rubro: scapularibus viridi-cyaneis: capite distincté pileato, pallidé brunneo, viridi-cyaneo lavato.

Hab. in insulâ 'Flores' dictâ.

Head (distinctly capped) pale brown, with a greenish-blue lustre; cheeks, sides of the neck, and a collar encircling the back of the neck, pale ochre; upper part of the back and scapularies ultramarine, with a tinge of green; back rich cobalt, deepening into ultramarine on the rump and upper tail coverts; quills brownish-black, the inner web pale ochre at the base, the outer webs, especially of the secondaries, washed with blue; tail rich blue above, black beneath; under surface of the body deep ochre, much paler on the throat; bill dark sealing-wax red, black at the tip; feet dark red. Total length 13.5 inches, of bill from front 3.2, from gape 3.7, wing 5.7, tail, 3.6, tarsus 0.45, middle toe 1.0, hind toe 0.45.

Hab. Flores (*Wallace*).

I refer to this species the bird figured by Buffon (*l.c.*), because in his plate he represents a Kingfisher with a green cap. Having, by an examination of specimens from Flores, discovered that the species inhabiting this island always has the cap very distinctly washed with green, I have separated it on account of this peculiarity, and refer Buffon's plate to the same bird.

The figures in the plate are taken from the typical specimens, as also are the descriptions.

SUB-FAMILY

DACELONINÆ.

CEYX PHILIPPINENSIS.

CEYX PHILIPPINENSIS.

(PHILIPPINE KINGFISHER.)

Ceyx philippinensis, ... Gould, P. Z. S. 1868, p. 404.

♂ rostro nigro, longiori : capite cyaneo fasciato : gulâ rufescente : pectore et abdomine intensè rufis : pectoris lateribus intensè lazulino lavatis.

Hab. in insulis Philippinis.

Head and nape bright indigo, thickly banded with irregular markings of bright cobalt; back very bright shining cobalt, inclining to ultramarine on the rump; scapularies and wing-coverts black, washed with bright indigo, the latter also spotted with cobalt; wing-feathers blackish, the secondaries narrowly edged with indigo; throat whitish, tinged with rufous; a patch of feathers on the side of the neck pure white, tinged with rufous on the outer edge; a spot in front of the eye, and the entire under-surface as well as the under wing-coverts deep rufous, the lower part of the abdomen and under tail-coverts slightly tinged with indigo; shoulders, and a spot on each side of the upper part of the breast, shining lazuli-blue; upper mandible brownish black, lower mandible pale orange; feet orange. Total length 5.5 inches, of bill from front 1.3, from gape 1.7, wing 2.3, tail 1.1, tarsus 0.3, middle toe 0.5, hind toe 0.2.

Hab. Luzon: Manilla (*mus. J. Gould.*)

This species, which was characterized as new by Mr. Gould at a Meeting of the Zoological Society on June 28th, 1868, is certainly very closely allied to *Alcyone cyanopectus*, from which, however, it may at once be distinguished by the deep chesnut-red colour of the under parts, and by the want of the distinct blue pectoral band which characterizes the latter species. The whole tone of the plumage also is brighter, and it very much resembles at first sight *Alcedo moluccensis*, from the style of plumage. It is, however, a typical *Ceyx* in form.

The figure in the plate is taken from the type specimen, as also are the description and measurements. Mr. Gould received it from Manilla, and after describing it, he very kindly placed it at my disposal for the present work.

CEYX SOLITARIA.

CEYX SOLITARIA.

(SOLITARY KINGFISHER.)

Ceyx solitaria,	. . .	Temm. Pl. Col. 595.
„ „	. . .	Sharpe, P.Z.S. 1868, p. 271.
Alcyone „	. . .	Gray and Mitch. Gen. of Birds, I, p. 82 (c. 1844).
„ „	. . .	Bonap, Consp. Gen. Av. I, p. 158 (1850).
„ „	. . .	Reich. Hand. *Alced.* p, 7, t. cccxcviii, fig. 3067 (1851).
Alcedo „	. . .	Schl. Mus. Pays Bas, *Alced.* p. 17 (1863).
„ „	. . .	„ Vog. Ned. Ind. *Alced.* pp. 12, 48, pl. 3 (1864).
Therosa „	. . .	Müller, MS.
Ceyx meninting	. . .	Less. Voy. Coq. I, p. 691 (1826).

C. rostro nigro: capite cyaneo fasciato: omnino minor: pectore et abdomine flavidis: gulâ albâ.

Hab. in Novâ Guineâ et in insulis adjacentibus.

Head and nape black, banded with bright ultramarine; back and scapularies rich ultramarine; cheeks and wing-coverts black, spotted with bright ultramarine; wing-feathers blackish, the inner web fuscous from the base, the secundaries narrowly edged with blue; tail black, edged with blue; throat white; a spot in front of the eye and a longitudinal patch of feathers on the sides of the neck, yellowish white; entire under-surface light orange; bill entirely black; feet orange. Total length 5 inches, of bill from front 1.3, from gape 1.6, wing 2.1, tail 0.8, tarsus 0.2, middle toe 0.4, hind toe 0.2.

Hab. New Guinea *(Wallace)*, Aru Islands *(Wallace)*, Ceram *(Mus. Lugd.)*, Mysol *(Wallace)*.

On account of its having a black beak, I suppose, this species has been classed by several writers as an *Alcyone*, but an examination of a specimen will show that it is more closely allied to *Ceyx*. The gonys is certainly not so abruptly ascending as is usual in the latter genus, but I have seen specimens with a bill quite as much depressed as that of an *Alcyone* is compressed. Added to this, its habits, which seem to be entirely insectivorous, according to the little we know about them, sufficiently indicate it to be a true *Ceyx*.

Mr. Wallace has kindly given me the following note, respecting it:—

"This little Kingfisher seems to be strictly confined to the Papuan Islands. The stomachs of those I killed contained the remains of water-beetles and other insects."

Lesson, who has most erroneously referred the present bird to the *Alcedo meninting* of

Horsfield, says *(l. c.)* that "it was found in the neighbourhood of small brooks in the vicinity of Dorey, New Guinea."

Mr. Wallace thinks that the locality of Ceram given by Dr. Schlegel in the "Museum des Pays Bas" is most probably erroneous, as it is unauthenticated by the name of any well-known collector. It is, however, just possible that the specimen mentioned may have come from there.

The figure is taken from Temminck's type specimen in the Leiden Museum, while the description is from a fine skin procured by Mr. Wallace in the Aru Islands, kindly lent to me out of his collection.

CEYX MELANURA.

CEYX MELANURA.

(LILAC-SPOTTED KINGFISHER.)

Ceyx melanura, . . . Kaup, Fam. der Eisv. p. 15 (1848).
Dacelo ,, . . . Schl. Mus Pays Bas, *Alced.* p, 49 (1863).

C. capite et uropygio lilacino: rostro corallino: maculâ ad latera colli cœruleâ: tectricibus alarum nigris cæruleo maculatis: major: capite lilacino obscurè maculato: interscapulio et scapularibus rufis: pectore pulchrè violaceo lavato.

Hab. in insulis Philippinis.

Above lilac-rufous, the head and cheeks obscurely spotted with faint lilac; scapularies rufous, a line of black feathers at the base; a patch of feathers on the sides of the neck blue; wing-coverts black, the tip of each feather spotted with bright blue; wing-feathers blackish, the inner web rufous from the base; tail above rufous, the exterior feathers blackish; a loral spot very faint orange; throat and a longitudinal patch of feathers under the before-mentioned blue spot on the sides of the neck, white; breast shining lilac tinged with violet; centre of the abdomen whitish; under wing and tail-coverts light rufous; bill and feet rich coral red. Total length 5 inches, of bill from front 1.2, from gape 1.6, wing 2.1, tail 0.7, tarsus 0.05, middle toe 0.09, hind toe 0.2.

Hab. Philippine Islands (*Mus. R. B. Sharpe*). Luzon: Manilla (*Mus. J. Gould.*)

This beautiful species was described in 1848 by Kaup under the rather inapplicable epithet of *melanura* or *black-tailed.* I have not employed the latter name for my English designation of the present bird, as I do not consider this to be its most distinguishing characteristic. It may always be distinguished from the other two rufous-headed species by the faint lilac spots on the crown of the head and cheeks. As regards the black tail, I have observed that in very young individuals this feature is apparent, but in older specimens the black becomes limited to a few marks on the exterior webs of the outer tail-feathers, and I should not be surprised to learn that the fully adult bird has the tail entirely rufous. A very fine pair in Mr. Gould's collection from Manilla have scarcely any black on the tail. This peculiarity I have also noticed in the Penang Kingfisher (*Ceyx rubra*). In a specimen from Penang in Mr. Wallace's collection the tail-feathers are quite black, while a bird in my own collection has the tail rufous without any black on the feathers at all. It remains to be seen whether this is a sexual difference, or a sign of the young bird, a question I have not been able satisfactorily to determine.

Additional References.—*Ceyx melanura.*—Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); id. Gen. of Birds, App. p. 5 (1848); Bonap. Consp. Gen. Av. I, p. 158 (1850): Reich. Handb. *Alced.* p. 9 (1851); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Cab. and Heine, Mus. Hein. th. II, p. 151 (1860). Sharpe, P.Z.S. 1868, p. 271,

I have hesitated to add the habitat "Ambonia" to the present species, as I fear that that locality has been erroneously assigned to the specimen in the Philadelphia Museum, as recorded by Mr. Cassin (*l. c*).

Nothing has as yet been published concerning the habits of this beautiful little Kingfisher, but they are doubtless similar to those of the other members of the genus *Ceyx*. The figure in the opposite plate is drawn from a very fine specimen from Manilla, kindly lent me by Mr. Gould, and I have taken the description and measurements from the same bird.

CEYX TRIDACTYLA.

CEYX TRIDACTYLA.

(PENANG KINGFISHER.)

Alcedo tridactyla . . Pall. Spic. Zool. vii, p. 10, t. II, fig. 1 (1769).
Ceyx tridactyla . . Sykes, P. Z. S. 1832, p. 84.
Alcedo rubra . . Bodd. Tabl. Pl. Enl. p. 49 (1783).
Ceyx rubra . . . Gray, Cat. Fiss. Brit. Mus. p. 59 (1848).
Dacelo rubra . . Schl. Mus. Pays Bas, *Alced.* p. 49 (1863).
Alcedo purpurea . . Gm. Syst. Nat. I, p. 449 (1788).
Ceyx purpurea . . Less. Traitè d'Orn. p. 38 (1831).
Alcedo erithaca . . Gm. Syst. Nat. I, p. 449 (1788).
Ceyx erythaca . . Blyth, Cat. Birds Mus. As. Soc, Beng. p. 50 (1849).
„ *luzoniensis* . . Stephens, Gen. Zool. xiii, p. 106 (1825).
„ *microsoma* . . Burton P. Z. S. 1837, p. 89.
Martin-pecheur de l'isle de Luçon, Sonn. Voy. Nouv. Guin. p. 67, pl. 32 (1776).
Martin-pecheur de Pondicherry, Buff. pl. Enl. 778, fig. 2.
Dein-ngyeen, of the Arracanese (*Blyth*).
Raja Whodan, of the Malays (*Eyton*).

C. capite et uropygio lilacinis: rostro corallino: maculâ ad latera colli cærulcâ: minor: interscapulio et scapularibus nigris, cyaneo lavatis: subtus flava.

Hab. in regione Indicâ.

Head and nape rufous, tinged with lilac; upper part of the back, scapularies and

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Additional references.—*Alcedo tridactyla*, Linn. Mant. Plant. p. 524 (1771), Scop. Del. Faun. et Flor. Insubr. II, p. 90 (1786). Gm. Syst. Nat. I, p. 459 (1788), *Dacelo rubra*, Schl. Vog. Ned. Ind. *Alced.* pp. 40, 68, pl. 16 (1864). *Ceyx tridactyla*, Strickl. P. Z. S. 1846, p. 99, Gray and Mitch. Gen. of Birds, I p. 80 (c. 1844). Jerdon, Ill. Ind. Orn. pl. 25 (1847), Gray. Cat. Fiss. Brit. Mus. p. 59 (1848), Bonap. Consp. Gen. Av. I, pp. 157, 158 (1850), Cass. Cat. Halc. Phil. Mus. p. 13 (1852), Bonap. Consp. Vol. Anis. p. 9 (1854), Hartl. Journ. f. Orn. 1854, p 413, Moore, P. Z. S. 1854, p. 269, Jerd. Birds of Ind. I, p. 229 (1862), Gray, Cat. Mamm, and Birds of Nep. p. 24 (1863), Sharpe, P. Z. S. 1868, p. 271. *Ceyx erythaca*, Mason, Burmah, p. 674. *Ceyx purpurea*, Reich. Handb. *Alced.* p. 9, t. cccxcviii, fig. 3071 (1851), Bonap. Consp. Vol. Anis. p. 9 (1854). *Ceyx purpureus*, Hartl. Journ. f. Orn. 1855, p. 423.

wing-coverts, black washed with bright blue; lower part of the back, rump and upper tail-coverts, rufous washed with bright lilac; wing-feathers blackish, the inner web rufous from the base; tail rufous, in some specimens black; a spot in front of the eye, cheeks, sides of the neck and under-surface of the body, pale orange; chin and a patch of feathers on the side of the neck, white; a spot at the base of the bill and a patch of feathers at the side of the neck from above the ear, blue; bill and feet coral-red; eyes brown. Total length 5. 3 inches, of bill from front, 1.2, from gape 1.6, wing 2.3, tail 1, tarsus 0.2, middle toe 0.4, hind toe 0.2.

Hab. India and Ceylon (*Jerdon*), Nepal (*Hodgson*), Penang (*Cantor*), Singapore (*mus Philad.*), Sumatra (*mus. Lugd*), Java (*mus. Brit.*) Philippine Islands (*Cuming*, *mus. Brit.*).

In an elaborate article published by Dr. Pucheran in the "Revue et Magazin de Zoologie" for 1861, this learned Ornithologist endeavours to prove that in accordance with the strict observance of the rule of priority, the name *tridactyla* should be applied to the red-backed species (*Ceyx rufidorsa*). It seems that both species were well known to the older authors, all of whom were wont to consider the red-backed bird as the female or else a variety of the blue-backed species.

The first mention of the two birds is found in an old work of Vosmaer's published at Amsterdam in 1768, where a figure of both birds is given. It is pretty clear that Linnæus in describing the bird in his "Mantissa" simply copied Vosmaer's description without apparently ever having seen the bird. Dr. Pucheran had only a French translation of Vosmaer's work at hand when he wrote his paper, and he argues that, as both birds were known to Vosmaer and Linnæus, by whom they were considered to be sexes of the same bird, the blue-backed species having been separated by Gmelin in 1788 under the name of *Alcedo purpurea*, the name *tridactyla* should fall on the supposed female. To the casual observer this reasoning appears fair enough, but the Zoological Society have lately acquired a copy of the original edition of Vosmaer's work, and I was rather astonished to find on examination that the Dutch author was not a binominalist and never gave a scientific name to any bird. Dr. Pucheran is again in error when he talks of the bird being *first* described by Linnæus and *afterwards* by Pallas, as the 12th fascicule of the latter's "Spicilegia" has a priority of two years over the "Mantissa" of Linnæus and as Pallas gave a very clear description of the present species under the name of *Alcedo tridactyla*, this name ought to be applied to the blue-backed bird. Vosmaer's work need not be taken into consideration at all, as it contains no scientific names. The red-backed species, considered by Pallas to be probably the female of his *Alcedo tridactyla*, was described as a distinct species for the first time by Mr. Strickland in 1846, under the name of *C. rufidorsa.*

"This very lovely species," writes Mr. Jerdon, in his "Birds of India," "is scattered though far from common, over all India with Ceylon. Col. Sykes procured it in the Deccan; but it seems to be a coast bird for the most part. I obtained it in Southern India and it has been killed near Calcutta. It appears to be more common in Malayana. It feeds exclusively on small fish and aquatic insects."

The Penang Kingfisher is undoubtedly the most widely distributed species of the whole genus, being found all over the Indo-Malayan Islands, and it is even met with in the Philippines. The British Museum contains a beautiful specimen obtained in these islands, by the late Mr. H. Cuming, and the Leiden Museum has also a young bird from the same locality.

My description and measurements taken from a very beautiful male in my own collection from Penang, and the figures represent a pair of birds in the Leiden Museum. The left hand figure, it will be observed, has a red tail, while the tail of the right hand bird is blackish. This difference may be sexual or the sign of a young bird, and I incline to think myself it is an indication of immaturity.

CEYX RUFIDORSA

CEYX RUFIDORSA.

(STRICKLAND'S KINGFISHER.)

Alcedo tridactyla, var. . . . . Shaw, Gen. Zool. viii, p. 97, (1811).
Ceyx tridactyla . . . . . Jard. and Selby, Ill. of Orn. I, pl. 55, fig. 2.
„ *rufidorsa* . . . . . Strickl. P.Z.S. 1846, p. 99.
Dacelo „ . . . . . Schl. Mus. Pays Bas, *Alced*, p. 48 (1863).
Chuchack-wrang, of the Javanese (*Horsfield*).
Binti-abang, of the Malays of Sumatra (*Raffles*).

C. capite et uropygio lilacinis: rostro corallino: maculâ ad latera colli caruleâ nullâ: scapularibus lilacino-rufis: tectricibus alarum rufis nigro-mixtis.

Hab. in regione Indo-Malayanâ.

Above lilac-rufous, tinged on the sides and back of the head, and on the back with shining violet; wing-feathers blackish, the inner web rufous from the base, more conspicuous on the secondaries, which are almost entirely rufous; throat and a patch of feathers on each side of the neck, white, tinged with light orange; a loral spot (very faintly developed), cheeks and the entire under-surface bright orange; bill and feet coral-red. Total length 4.7 inches, of bill from front 1.2, from gape 1.09, wing 2.2, tail 0.8, tarsus 0.05, middle toe 0.4, hind toe 0.2.

Hab. Malacca (*Cantor*), Sumatra (*Mus. Lugd.*). Bangka (*Mus. Lugd.*), Java (*Mus. Lugd.*) Bawian Island (*Hartlaub*), Lombock (*Wallace*), Sumbawa (*Mus. Lugd.*), Flores (*Wallace*), Borneo (*Motley*).

As I remarked in my description of the Penang Kingfisher, I was led into error with regard to the present species, supposing that Dr. Pucheran was well acquainted with

Additional references.—*Ceyx rufidorsa*, Gray, Gen. of Birds, App. p. 5 (1848), Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849), Reich. Handb. p. 8, t. ccexeviii, fig. 3070 (1851), Cass. Cat. Halc. Phil. Mus. p. 13 (1852), Bonap. Consp. Vol. Anis. p. 9 (1854), Hartl. Journ. f. Orn. p. 1854, p. 413. Horsf. and Moore, Cat. Birds Mus. E. I. Co. p. 132 (1854), Moore, P. Z. S. 1854, p. 270, Cab. and Heine, Mus. Hein. th. II, p. 152 (1860), Sclater, P. Z. S. 1863, p. 213, Wall. P. Z. S. 1863, p. 484, Sharpe, P. Z. S. 1868, p. 271. *Dacelo rufidorsa*, Schl. Vog. Ned. Ind. *Alced.* pp. 40, 67, pl. 16 (1864).

Vosmaer's work, or at least with his nomenclature. I regret that the name *tridactyla* was printed on the plate, before I could countermand the order.

Mr. Strickland and Mr. Moore both call attention to a blue spot on the sides of the neck of the present bird, which they say is not so much developed as in *C. tridactyla*, but I cannot find any blue spot at all, though I have examined many specimens. The violet shades on the side of the head are certainly more brilliant just by the ear, but any blue spot, like that so conspicuous in the allied species *C. tridactyla* and *C. melanura*, seems to me to be always wanting. The tiny spot on the forehead is much less developed than in *C. tridactyla*, and is indeed occasionally absent. The entirely rufous upper surface will always distinguish it from all other species of the genus.

The late Mr. Motley says[c] that in Borneo, the present species is "not uncommon, frequenting the small streams in the woods, and making its nest in holes in banks."

For the following very interesting note I am indebted to the kindness of Mr. Wallace:—"This beautiful little bird is not uncommon in Malacca and the large western islands of the Archipelago in low dry or swampy jungle, but generally near some stream or lake. Often while searching after other birds, its rapid chirping note would be heard, and it would dart by, appearing more like a small flame of fire than a living thing. It eats small insects which it picks from the ground, darting upon them as an ordinary Kingfisher darts upon a fish."

The only other notice of the habits of the present bird appears in Schlegel's "Museum," where the author gives a few notes on Javanese birds from the pen of the Viscount de Bocarmé. This nobleman observes:—"In Java, it is only met with in secluded places, along the most shaded creeks, and where the banks are obstructed. It is very rarely observed flying along the surface of the water; its habits being to remain on the same branch the whole day, whence it looks out for water-spiders. If one can approach it unobserved, without frightening the bird, it may be seen to precipitate itself twenty times a minute on the swarms of these insects, which are often very numerous."

I have a specimen in my collection, purchased of a dealer, and said to come from Singapore. Lord Walden, who has had great experience in Oriental birds, thinks that the "make" of the skin indicates its origin from Camboja. It is both larger and brighter than the Malaccan birds. The following are the measurements of this specimen. Total length 5.1 inches, of bill from gape 1.4, from gape 1.7, wing 2.4, tail 1, tarsus 0.05, middle toe 0.09, hind toe 0.2.

The figure in the accompanying plate is drawn from a Bangka specimen in the Leiden Museum, while I have taken the description and measurements from a skin in my own collection, procured in Flores by Mr. Wallace.

[c] P. Z. S. 1863, p. 213.

CEYX SHARPEI.

CEYX SHARPII.

(BORNEAN KINGFISHER).

Ceyx Sharpii . . . . . Salv., Atti R. Accad. Tor. 1869, p. 463.
„ „ . . . . . Sharpe, P.Z.S. 1869, p. 511.

C. capite et uropygio lilacinis : rostro corallino : maculâ ad latera colli cœruleâ nullâ : scapularibus lilacinis : tectricibus alarum nigris ac rufis, cyaneo lavatis.

Hab. in insulâ ' Borneo ' dictâ.

Above most brilliant lilac-rufous, with violet reflections ; scapularies lilac-rufous, the innermost black, forming a distinct black stripe; wing-coverts black, the least coverts for the most part rufous, and edged with a distinct line of blue spots ; quills jet black, the inner web pale rufous at the base, the innermost secondaries entirely of a pale rufous colour ; tail rufous ; a spot at the base of the bill deep blue black, very distinct ; the feathers round the eye also black ; space between the bill and the eye glistening yellow ; throat and a longitudinal patch of feathers along the sides of the neck white ; entire under surface rich orange-yellow, darker on the flanks and under wing-coverts ; bill and feet rich vermillion. Total length 4.7 inches, of bill from front 1.4, from gape 1.6, wing 2.3, tail 0.9, tarsus 0.25, middle toe 0.4, hind toe 0.15.

Hab. Sarawak, Borneo (*Doria*).

This Kingfisher, which Count Salvadori of Turin has named after me, is certainly very closely allied to some of the other rufous-backed species of the genus *Ceyx*, but nevertheless seems to differ specifically from all of them. To *Ceyx Dillwynni* it approaches in having the wing-coverts edged with blue, but differs in having rufous scapularies. Again it is nearly allied to *C. rufidorsa*, but is to be distinguished from this also by the blue spots on the wing-coverts, and by the black line along the inner scapularies, neither of which characters obtain in the Malayan species. In addition to these differences *Ceyx Sharpii* far surpasses all the other rufous-backed *Ceyces* in the extreme brilliancy of the colouring.

I am indebted to the kindness of Count Salvadori for lending the type-specimens, of which a figure and description is given in the present article, and I beg leave publicly to return him my best thanks for his consideration

CEYX DILLWYNNI.

CEYX DILLWYNNI.

(DILLWYN'S KINGFISHER.)

Ceyx Dillwynni . . . . . Sharpe, P.Z.S. 1868, pp. 591, 593 et, 1869, p. 511; Salv. Atti R. Accad. Torin. 1869, p. 461; Gray, Hand-list of B. p. 94.

Ceyx tridactyla . . . . . Reich. Handb. *Alced.* p. 8, t, cccciii b. fig. 3389 (1851); Motley and Dillw. Nat. Hist. of Lab. p. 13 (1855).

C. capite et uropygio lilacinis: rostro corallino: maculâ ad latera colli cæruleâ nullâ: scapularibus nigris cæruleo lavatis.

Hab. in insulâ "Labuan" dictâ.

Head, neck, and the whole of the back lilac-rufous, with beautiful shades of violet; a little spot on the forehead at the base of the bill, blue; a longitudinal patch of feathers along the sides of the neck, white; scapularies black, washed with bright blue; wing-coverts rufous varied with black, with a few minute spots of bright blue at the tips of some of the median coverts; quills blackish, the inner web light rufous at the base, more conspicuous on the secondaries, the outer web of the first primary rufous for the greater part of its length; tail rufous, black at the tip; chin and abdomen white; shoulders, upper part of the breast, flanks, under wing- and tail-coverts, rufous; bill and feet coral-red. Total length 5·8 inches, of bill from front 1·5, from gape 1·5, wing 2·45, tail 1·2, tarsus 0·25, middle toe 0·4, hind toe 0·2.

Hab. Labuan (*Motley and Dillwyn*).

In examining the "Handbook" of Professor Reichenbach I was struck with the figures he had given of the bird he calls *Ceyx tridactyla*, and I could not quite reconcile them with any species of Kingfisher with which I was then acquainted. They were apparently intended to represent two Bornean specimens in the Dresden Museum. The absence of the blue spot at the side of the neck sufficiently proved that they were not intended for *Ceyx melanura* or *Ceyx tridactyla*, while at the same time they evidently were not *Ceyx rufidorsa*, of which a figure had already been given in the work. The Bornean bird had blue scapularies, which at once precluded the idea of its being identical with the last-named bird, which has rufous scapularies uniform with the back.

In Messrs. Motley and Dillwyn's "Natural History of Labuan," (*l.c.*) I found a corroboration of my idea of the distinctness of the Bornean Kingfisher. In this work the bird called *Ceyx tridactyla* is said to be "above from the beak to the tail, rufous red;" but has "the scapulars dusky black, tipped with rich blue." In reply to my enquiries, Mr. Dillwyn most kindly sent for examination the specimen which had formed the subject of

the description in the above-mentioned work, and I found, as I expected, that it was perfectly distinct, and I therefore named it with much pleasure after Mr. Dillwyn, who has done so much to increase our knowledge of Bornean Ornithology.

Ceyx Dillwynni is allied to *Ceyx rufidorsa*, but is a little larger, and may at once be distinguished by the blue scapularies.

The description, measurements and figure are from the type-specimen, which was very kindly presented to me by Mr. Dillwyn.

CEYX CAJELI.

CEYX CAJELI.

(BOURU KINGFISHER).

Ceyx cajeli, . . Wall. P. Z. S. 1863, p. 25 pl. v.
Dacelo ,, . . Schl. Vog. Ned. Ind. *Alced.* pp 39, 67, pl. 16 (1864).
,, ,, . . ,, Ned. Tidschr. 1866, p. 339.

C. capite nigro, cyaneo maculato: dorso postico et uropygio argenteo-cæruleis: rostro corallino, breviori: genis et regione paroticâ nigris.

Hab. in insulâ dictâ 'Bouru' maris Celebensis.

Crown of the head and wing-coverts black, with very minute spots of clear blue, each feather having a central streak of brighter colour; back silvery blue; scapulars and tail black; wing-feathers black, the inner web light reddish near the base; a loral spot light orange; a patch of feathers on each side of the neck white tinged with orange; throat white; under-part light orange, deeper on the flanks; a considerable patch of feathers on the sides of the upper part of the breast, black; bill and feet pale coral red; eyes dark. Total length, 5.5 inches, of bill from front 1.2, from gape 1.6, wing, 2.5, tail 1, tarsus 0.3, middle toe 0.9, hind toe 0.2.

Hab. Bouru *(Wallace.)*

This interesting bird is one of the discoveries that we owe to the indefatigable energy of Mr. Wallace, by whom it was first named in his paper on the 'Birds of Bouru,' *(l. c.)*. It may easily be distinguished from all the other species of the genus by the very small spots on the head, black cheeks, and the pecular silvery blue on the back. The bill is also shorter and stouter than in any of the allied species.

Mr. Wallace, says:—

"This species is very like *C. lepida;* but differs in the very small spots on the head and the stripe on the back being of quite a different blue colour, and also in the scapulars being entirely black, whereas in the other species they are tipped with rich blue. I have named this species after the town or fort of Cajeli in Bouru, to which island this pretty bird is most probably strictly confined."

I am further indebted to Mr. Wallace for the following note, which he has kindly forwarded to me for the present work;—

"*Ceyx cajeli* inhabits swampy thickets in Bouru, feeding on water-insects and minute fish, which it captures in pools and ditches."

Schlegel (*l. c.*) says he has received the present species from Matabello and the Sula Islands, collected by Rosenberg, but I have not seen specimens, and it seems doubtful whether a variety of *lepida* has not been mistaken for this bird in the former instance, while the bird from the Sula Islands is certainly quite different.

The figures represented in the plate are drawn from the type specimen, kindly lent me by Mr. Wallace, from which also I have taken my description and measurements.

CEYX WALLACEI.

CEYX WALLACII.

(WALLACE'S KINGFISHER.)

Ceyx Wallacii, . . Sharpe, P. Z. S. 1868, pt. 2.
,, *lepida*, . . Wall. P. Z. S. 1862, p. 338.

C. capite nigro cyaneo maculato: rostro corallino, longiori: genis cum regione paroticâ cyaneo maculatis: scapularibus nigris: dorso postico et uropygio lætè cyaneis.

Hab. in insulis dictis "Sula" maris Celebensis.

Above black; head and nape spotted with cobalt, more on the latter, each feather having a central stripe of brighter blue; cheeks and wing-coverts streaked with bright cobalt; back very rich shining cobalt, the upper tail-coverts slightly tinged with ultramarine; scapularies black; wing and tail-feathers blackish, the inner web of the former light rufous from the base; throat whitish; a spot on each side of the base of the bill and the whole of the under-surface bright orange; the characteristic spot on the sides of the neck deep rufous; a line at the base of the loral spot, also the space between this spot and the eye, and a large patch of feathers on the side of the upper part of the breast deep black; bill and feet coral-red; iris dark. Total length 5.5 inches, of bill from front 1.4, from gape 1.7, wing 2.5, tail 1, tarsus 0.2, middle toe 0.5, hind toe 0.2.

Hab. Sula Islands (*Wallace*).

The present species was described by me at a meeting of the Zoological Society on May 14th, 1868, and was named after Mr. Wallace, to whom I am indebted not only for many valuable notes by which these pages are enriched, but for the loan of his entire collection of Kingfishers, thus enabling me to describe the new species discovered by him in almost every case from the type specimens themselves.

It was in examining his collection that I met with the present bird, which I believed to be new to science, and recent experience has fully confirmed my conviction, for shortly after describing it, I discovered two more specimens in the British Museum, likewise from the Sula Islands.

I extract the following note from my paper in the 'Proceedings,' which will illustrate the points in which the present species differs from *C. lepida*.

"Its nearest ally is certainly *C. lepida*, but it is at once to be distinguished by the cobalt instead of ultramarine (or rather violet) tinge of the blue on the head, cheeks and back, as well as by the totally black scapularies, which in *C. lepida* are washed with bright violet. The patch of feathers on each side of the neck is also dark rufous, instead of white tinged with orange, as in *C. lepida*, and there are other minor differences."

Mr. Wallace in his paper on the 'Birds of the Sula Islands,' refers to this bird as *C. lepida*, but he had noted the differences existing in the two birds, and it was by an oversight that the present species was not described as new on that occasion.

The figure in the accompanying plate is drawn from the type specimen, from which also the description is taken.

CEYX LEPIDA.

CEYX LEPIDA.

(BEAUTIFUL KINGFISHER.)

Ceyx lepida,	. . .	Temm. Pl. Col. 595.
Alcyone lepida,	. . .	Gray and Mitch. Gen. of Birds, I. p. 82 (c. 1844).
Dacelo lepida,	. . .	Schl. Mus. Pays, Bas, *Alced.* p. 48 (1863).

C. capite nigro, cæruleo maculato: rostro corallino, longiori, robustiori: genis et regione paroticâ cæruleo maculatis: dorso ultramarino, uropygio cyanescente: major: maculis loralibus majoribus: capitis summi maculis et interscapulio cærulescentioribus.

Hab. in insulis dictis "Ceram," "Amboina," et in Novâ Guineâ australi et australi-occidentali.

Head, nape, cheeks and wing-coverts black, plentifully spotted with rich ultramarine, each feather having a central stripe of brighter blue; scapularies black, washed with rich ultramarine; back very bright ultramarine, becoming silvery-blue towards the rump; wing-feathers blackish, the inner web rufous from the base; tail blackish, tinged with ultramarine; throat and a longitudinal patch of feathers on the side of the neck white, the latter tinged with orange; a large spot in front of the eye, and the entire under-surface orange, paler on the abdomen; bill and feet rich coral-red. Total length 5.5 inches, of bill from front 1.5, from gape 1.7, wing 2.5, tail 1, tarsus 0.3, middle toe 0.5, hind toe 0.2

Hab. Amboina (*Wallace*), Ceram (*Wallace*). South and South-West Coast of New Guinea (*Wallace*, *von Rosenberg*).

Specimens of the present species from the above localities have been brought to Europe by Mr. Wallace, but the bird is by no means common in collections in this country.

Mr. Wallace tells me that "it is the most abundant and characteristic species in the Moluccas. Its habits resembles those of *Ceyx rufidorsa,* Strickland."

I have taken my description and measurements from a very beautiful bird in Mr. Wallace's collection, procured by him in Northern Ceram. The left hand figure is drawn from Temminck's type specimen in the Leiden Museum, while the right hand one represents the Ceramese bird. Temminck's specimen is evidently a younger bird.

Additional References.—*Ceyx lepida*, Gray, Cat. Fiss. Brit. Mus. p. 59 (1848), Bonap. Consp. Gen. Av. I. p. 158 (1850), Reich. Handb. *Alced*, p. 10, t. cccxcviii, fig. 3066 (1851), Cass. Cat. Halc. Phil. Mus. p. 14 (1852), Sharpe, P.Z.S. 1868, p. 271. *Dacelo lepida*, Schl. Vog. Ned. Ind. *Alced.* pp. 39, 66, pl. 16 (1864).

CEYX UROPYGIALIS.

CEYX UROPYGIALIS.

(SILVERY-BACKED KINGFISHER).

Ceyx uropygialis, ... Gray, P. Z. S. 1860, p. 348.
„ „ , ... Sharpe, P. Z. S. 1868, pp. 271, 596.

C. capite nigro, cæruleo maculato: dorso postico ultramarino: uropygio læté argenteo: scapularibus cæruleo lavatis: minor: subtus intensè aurantiaca.

Hab. in insulis dictis "Batchian," "Gilolo," "Ternate," maris Celebensis.

Crown of the head black, minutely spotted with ultramarine, each feather having a very faint stripe of cobalt down the centre; scapularies black, faintly washed with ultramarine; back ultramarine on the upper part and on the upper tail-coverts; rump silvery-blue, with a tinge of greenish in some lights; wing-coverts black, tipped with ultramarine; wing feathers blackish, the inner web rufous at the base; tail black; throat and a longitudinal patch of feathers along the sides of the neck white, the latter slightly tinged with orange; a spot in front of the eye pale orange; under-surface of the body with the under wing and tail-coverts very deep orange; bill and feet coral-red. Total length 5.5 inches, of bill from front 1.3, from gape 1.7, wing 2.4. tail 0.9, tarsus 0.25, middle toe 0.45, hind toe 0.2.

Hab. Batchian, Gilolo, Ternate *(Wallace)*.

This Kingfisher is very closely allied to *Ceyx lepida*, from which indeed it is hardly separable. It differs chiefly in its smaller size, brighter back, and in the more intense orange of the under parts. My figure is taken from a female specimen, which on comparison I found to be absolutely identical with the type in the British Museum. Specimens from Batchian and Gilolo are the same as those from Ternate.

As I have mentioned in my paper on the genus '*Ceyx*,' published in the Zoological Society's "Proceedings," I have not been able hitherto to determine satisfactorily a species brought by Mr. Wallace from Batchian and Gilolo; I have never seen a specimen from Ternate. This Kingfisher does not agree exactly with *Ceyx uropygialis*, or *Ceyx lepida*. To a casual observer, it would appear to be a young bird, but it is larger than *Ceyx uropygialis*, and is decidedly different from young specimens of *Ceyx lepida* in my collection. I have

seen at least half-a-dozen examples of this undetermined species in different collections in this country, all from Batchian or Gilolo, and they all present the same characters. The blue of the back is never so bright as in *Ceyx lepida,* with which, however, it corresponds in size. In the very deep orange colour of the breast it agrees with *Ceyx uropygialis*, but the back is not so bright as in this last named species. I think that on the arrival of more specimens I shall be able to characterize the Batchian bird as new, but as our knowledge of the ornithology of the Moluccas is still so limited, I prefer to consider it at present a variety of *Ceyx uropygialis.*

CEYCOPSIS FALLAX.

CEYCOPSIS FALLAX.

(DECEPTIVE KINGFISHER.)

Dacelo fallax, ... Schl. Ned. Tidschr. 1866, p. 187.
Ceycopsis fallax, ... Salv. Atti, R. Accad. Sci. Tor. 1869, p. 447.

C. suprà rufescens: pileo ultramarino et lilacino transfasciato: dorso postico et uropygio fuscescente nigris, cyaneo lavatis: tectricibus alarum superioribus rufis lilacino maculatis: remigibus fuscis externè rufo lavatis: subtus rufa: gutture et strigâ longitudinali ad latera colli albis: rostro et pedibus corallinis.

Hab. in insulâ 'Celebes' dictâ maris Moluccensis.

Crown of head dusky-red, barred with ultramarine and lilac; no distinguishable loral spot, all the space between the base of the beak and the eye being rufous; cheeks and sides of head rufous with a brilliant lilac lustre; nape of the neck and middle of the back rufous; scapularies dusky rufous; lower part of the back and rump fuscous-brown washed with cobalt; tail fuscous-brown; wing coverts dull rufous spotted with lilac; wing-feathers fuscous-brown, the inner web rufous from the base towards the tip, the outer web of the secondaries rather broadly edged with dull rufous; throat and a patch of feathers along the side of the neck white; rest of the under-surface of the body orange-rufous, with a beautiful peach coloured lustre on the breast; bill and feet vermilion. Total length 5 inches, of bill from front 1.25, from gape 1.6, wing 2.3, tail 0.8, tarsus 0.25, middle toe 0.4, hind toe 0.2.

Hab. Celebes (*von Rosenberg*).

This remarkable Kingfisher was first made known to science by Professor Schlegel (*l.c.*), from specimens forwarded by MM. von Rosenberg, and Renesse van Duivenbode, from the island of Celebes, which, as pointed out by Mr. Wallace, possesses a fauna of its own. The discovery of this bird is a further confirmation of the truth of Mr. Wallace's assertion, for it is generically distinct from all other Kingfishers, though exhibiting a certain affinity towards the genera *Ceyx* and *Ispidina*. From both of these, however, it is easily distinguished by the form of its bill, which is much depressed and has a perfectly straight culmen with a gradually ascending gonys. This peculiarity is shewn in the accompanying plate. The fact of its having four toes at once separates it

from the genus *Ceyx*, while it also differs from *Ispidina* in having the inner toe much shorter than the outer one.

Professor Schlegel states, that 'this very rare little species is found on the borders of the creeks in the mountainous parts of the island of Celebes.' Beyond this nothing is known respecting it.

I must here return my hearty thanks to Count Turati of Milan, who most kindly sent over a specimen of this Kingfisher from his magnificent collection, for the use of the present work, thus enabling me to give a figure and description of the species. This is only one of the many acts of kindness for which I am indebted to this nobleman, who has lent me several others of his rarest Kingfishers.

ISPIDINA MADAGASCARIENSIS.

ISPIDINA MADAGASCARIENSIS.

(MADAGASCAR KINGFISHER).

Ispida madagascariensis, . . .	Briss. Orn. IV, p. 508, pl. xxxviii, fig. 1 (1760).
Alcedo „ , . . .	Linn. Syst. Nat. I, p. 179 (1766).
Ispidina „ , . . .	Cass. Cat. Halc. Phil. Mus. p. 13 (1852).
Dacelo „ , . . .	Schl. P. Z. S. 1866, p. 421.
Dacelo ruffulus	Lafr. Rev. Zool. 1838, p. 224.
Martin pecheur de Madagascar, . .	Buff. Pl. Enl. 778, fig. 1.

I. suprà lilacino-rufa: subtus albida: genis, hypochondriis et torque pectorali lilacino-rufis.

Hab. in insulâ "Madagascar" dictâ.

Upper surface of the body rufous, with here and there a slight lilac lustre; wing-feathers blackish, the inner web light rufous from the base, the outer web edged with rufous, more especially on the secundaries which are almost entirely of the latter colour; throat, a longitudinal patch of feathers along the sides of the neck extending backwards middle of the abdomen, and under tail-coverts, white; cheeks, and sides of the body, rufous; under wing-coverts pale rufous; bill and feet coral red. Total length 5 inches, of bill from front 1.0, from gape 1.4, wing 2.3, tail 1.0, tarsus 0.25, middle toe 0.45, hind toe 0.2.

Hab. Madagascar (*Brisson, Newton, and Van Dam.*)

So rare is this little Kingfisher in collections, that it has been till lately only known from Buffon's figure in the "Planches Enluminées." Many Ornithologists, including Mr. Jerdon and the late Prince Bonaparte, have considered that this figure as well as Brisson's

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Additional references.—*Alcedo madagascariensis*, Gray, Gen. of Birds, I, p. 81 (c. 1844), Bonap. Consp. Gen. Av. I, p. 159 (1850). *Ispidina madagascariensis*, Bonap. Consp. Vol. Anis. p. 9 (1854), Hartl. Journ. f. Orn. 1860, p. 86, id. Faun, Madag. p. 30 (1861), Roch and Newton, Ibis, 1862, p. 271. *Dacelo madagascariensis*, Schl. and Poll. Faun. Madag. Ois. p. 59 (1868).

description refer to the Malaccan *Ceyx rufidorsa*. Mr. Strickland, however, pointed out in 1846 that Brisson's species had four toes and therefore could not be a *Ceyx*.

The present species seems to be entirely confined to Madagascar, and even in this island appears to be very rare. Messrs. Roch and Newton have mentioned it in the "Ibis" (*l.c.*) and remarked that "a specimen was obtained by us in the great forest of Alana-masaotra on the 27th of October, 1861—the only one seen."

Messrs. Pollen and Van Dam (*l.c.*) state:—"This species is very rare in the parts of Madagascar we explored. We only observed it once, namely on the 15th of August, in the forest near the village of Ambany-alla. It appears that these birds only frequent the forests as is indicated by their name "Bintsi-alla" which means Kingfisher of the Forest. Their manner of living is unknown to us; the only thing we noticed was that in hopping from one branch to another a little hissing note was heard."

I have taken the description and measurements from a specimen procurred in Madagascar by Mr. F. Plant, and kindly lent to me by the Viscount Walden.

ISPIDINA LEUCOGASTRA.

ISPIDINA LEUCOGASTRA.

(WHITE-BREASTED KINGFISHER.)

Halcyon leucogaster, ...	Fraser, P. Z. S. 1846, p. 4.
Alcedo leucogaster, ...	Kaup, Verh. Nat. Ver. Darmst. 1848, p. 75.
Alcedo leucogastra, ...	Gray, Cat. Fiss. Brit. Mus. p. 64 (1848).
Corythornis leucogastra, ...	Bonap. Consp. Vol. Anis. p. 10 (1854).
Ispidina leucogastra, ...	Reich. Handb. *Alced.* p. 6, t. cccxcv, fig. 3056 (1851).

I. dorso lætè ultramarino : pileo nigro, ultramarino fasciato : abdomine albo.

Hab. in Africâ occidentali.

Head black, banded with ultramarine; back and scapularies rich ultramarine; wing-feathers blackish, the inner web light rufous from the base, the exterior web of the secundaries faintly edged with ultramarine; tail ultramarine above, black beneath; a patch of feathers in front of the eye extending backwards over the eye, cheeks, ear-coverts and sides of the neck bright rufous; a patch of feathers along the side of the neck, throat and middle of the body white; sides of the body and under wing-coverts bright rufous; bill sealing-wax red; feet red. Total length 5 inches, of bill from front 1.4, from gape 1.7, wing 2.4, tail 1.0, tarsus 0.3, middle toe 0.45, hind toe 0.2.

Hab. Fernando Po (*Fraser*), Gaboon (*Du Chaillu*, *Verreaux*), Ashantee (*mus. R. B. Sharpe*) Gold Coast (*mus. Lugd.*), Sierra Leone (*mus. J. Gould*).

This is the largest of the *Ispidinæ*, and from its more compressed bill and piscivorous habits, seems to approach the genus *Alcedo*. Mr. Louis Fraser, whose name is well known

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Additional references.—*Halcyon leucogaster*, Allen and Thomps. Exp. Nig. II, p. 503 (1848), Gray, Gen. of Birds, I, p. 79 (c. 1844). *Alcedo leucogaster*, Kaup, Fam. *Alced.* p. 13 (1848), Fraser, Zool. Typ. pl. 32 (1849), Strickl. Contr. to Orn. 1851, p. 134, Jard. Mem. of Strickl. p. 331 (1858), Schl. Mus. Pays Bas, *Alced.* p. 15 (1863). *Alcedo leucogastra*, Bonap. Consp. Gen. Av. I, p. 159 (1850), Verr. Rev. Zool. 1851, p. 268, Hartl. Journ. f. Orn. 1854, p. 4, Mull. Journ. f. Orn. 1855, p. 9, Hartl. Orn. West Afr. p. 35 (1857), Cass. Proc. Philad. Acad. 1857, p. 37, Du Chaillu, Eq. Afr. p. 472 (1861). *Ispidina leucogastra*, Cass. Cat. Halc. Phil. Mus. p. 13 (1852).

in connection with the ornithology of Western Africa, discovered the present species in Fernando Po, and it has since been met with on the opposite coast of the Continent, but so far as we yet know, it is strictly confined to Western Africa.

Mr. Fraser has supplied us with the following details respecting it: "This species I believe to be peculiar to the island of Fernando Po, where it is by no means uncommon. It frequents the solitary brooks, which everywhere intersect that island. Its habits and manners, as far as opportunity offered of observing them, were precisely the same as those of our British Kingfisher, perching upon the over hanging branches and stones, from whence it darts upon the small fish, with which these streams abound."

The MM. Verreaux also state that in Gaboon, "it frequents the rivers, where it feeds on little fishes."

The figure is taken from an example in the Leiden Museum, but the description from the type-specimen which has been kindly lent me by Mr. Eyton, in whose collection it still remains.

ISPIDINA PICTA.

ISPIDINA PICTA.

(ROSE-CHEEKED KINGFISHER.)

Todus pictus, ...	Bodd. Tabl. Pl. Enl. p. 49 (1783).
Alcedo picta, ...	Gray and Mitch. Gen. of Birds, I, p. 81, pl. 28 (c, 1844).
Ispidina picta, . . .	Kaup, Fam. *Alced.* p. 12 (1848).
Todus cæruleus, . . .	Gm. Syst. Nat. I, p, 444 (1788).
Alcedo cærulea, . . .	Rupp. Neue Wirb. Vog. p. 70 (1835).
Ispidina cærulea, . . .	Bonap. Consp. Vol. Anis. p. 9 (1854).
Alcedo pusilla, . . .	Shaw and Nodd. Nat Misc. v. pl. 159 (1793).
Alcedo ultramarina, . .	Daud. Ann. Mus. d'Hist. Nat. II, p. 443, pl. lxii, fig. 2 (1833).
Alcedo nutans, . . .	Vieill. Nouv. Dict. d'Hist. Nat. xix, p. 412 (1818).
Halcyon cyanotis, . . .	Swains. Birds of W. Afr. II. p. 103 (1837).
Alcedo cyanotis, . . .	Hartl. Journ. f. Orn. 1854, p. 4.
Ispidina cyanotis, . . .	Hartl. Journ. f. Orn. 1861, p. 105.
Alcedo purpurea, . . .	Des Murs, Voy. en Abyss. Zool. p. 82 (1848).
Todier de Juida, . . .	Buff. Pl. Enl. 783.
Opere, ...	of the Natives of Ibadan (*Hinderer*).

I. major : dorso lætè ultramarino : pileo toto. nigro, ultramarino fasciato : abdomine aurantio : maculâ ad latera colli cœruleâ nullâ.

Hab. in Abyssiniâ et in Africâ occidentali.

Crown of the head black, banded with bright ultramarine; back and scapularies very

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Additional references.—*Alcedo picta*, Gray, Cat. Fiss. Brit. Mus. p. 65 (1848), Schl. Mus. Pays Bas, *Alced.* p. 16 (1863). *Ispidina picta*, Reich. Handb. *Alced.* p. 6, t. cccxcvii, fig. 3061-62 (1851), Cass. Cat. Halc. Phil. Mus. p. 12 (1852), Verr. Rev. et Mag. de Zool. 1855, p. 274, Gurney, Ibis, 1859, p. 153, Cab. and Heine, Mus. Hein. th. II, p. 145 (1860). *Alcedo cærulea*, Bonap. Consp. Gen. Av. I, p. 158 (1850), Hengl. Sitz. Akad. Wien, 1856, p. 270, Antin. Cat. Coll. Ucc. p. 29 (1864), Hartl. Journ. f. Orn. 1866, p. 201. *Alcedo ultramarina*, Shaw and Nodd. Nat. Misc. xxi, pl. 901 (1809). *Alcedo nutans*, Bon. et Veill. Encl. Meth. I, p. 396 (1823). *Halcyon cyanotis*, Jard. Contr. to Orn. 1849, p. 6, Müll. Journ. f. Orn. 1855, p. 8. ***Alcedo cyanotis***, Hartl. Orn. West Afr. p. 35 (1857), Bocage, Jorn. Acad. Lisb. 1867, p. 134. *Ispidina cyanotis*, Brehm, Reise nach Habesch pp. 16, 210 (1863). Heugl. Journ. f. Orn. 1864, p. 333.

rich ultramarine; wing-coverts black, tipped with ultramarine; wing feathers black, the inner web rufous from the base, the secondaries slightly edged with blue; tail dark blue above, black beneath; a patch of feathers in front of the eye, extending backwards over the eye along the sides of the head and forming a nuchal collar, cheek and ear-coverts rufous with a beautiful lilac lustre; sides of the neck and the entire under surface of the body deep orange rufous; throat and a patch of feathers along the sides of the neck pure white; bill and feet rich coral-red; eyes dark brown. Total length 4.3 inches, of bill from front 1.0, from gape 1.25, wing 1.9, tail 0.9, tarsus 0.25, middle toe 0.35, hind toe 0.15.

Hab. Senegambia, Goree (*Mus. Brem.*), Kasamanze (*Verreaux*), Ibadan (*Hinderer*), Gold Coast (*Mus. Lugd*), Old Calabar (*Jardine*), R. Niger (*Thomson*), Gaboon (*Verreaux*), Angola (*Gujon*), Malimba (*Perrein*), Abyssinia (*Ruppell*), Eastern Senaar, Fazogloa (*Heuglin*), Bogos Country (*Jesse*), Gazelle River (*Antinori*).

On the habits of this pretty little Kingfisher Mr. Gurney (*l.c.*) has published a short note by Mrs. Hinderer of Ibadan to the effect that its food consists of flies, and another published notice that I have yet met with is by the MM. Verreaux, (*l.c.*) which I transcribe entire.

These gentlemen observe, "Although its habits offer a certain analogy to those of *Corythornis*, it is not less true that they also approach those of *Cancrophaga*. Exhibiting like these birds a preference for insects, which they seek among the bushes bordering water, they often seize those which may be flying above the surface. But the fact which in our opinion characterizes the generic separation of these birds, is that the *Ispidinæ* nest in the holes of trees, instead of choosing the numerous holes which exist along the banks bordering the rivers, like *Corythornis*, *Alcedo*, &c.

"The female lays four pure white eggs, less rounded than in the case of the preceding birds (*Halcyon dryas*). Both sexes sit simultaneously and provide for the wants of their young. With the exception of the time of incubation, they are only met with isolately. This species appear to remain in Gaboon the whole year."

"The iris is blackish brown, but the beak and tarsi, which are dull brown in the young, become beautiful vermilion red when the bird is quite adult."

Dr. Th. von Heuglin states that "the *Ispidina picta* is nowhere common in North Eastern Africa; mostly observed in the Wood-region as high as 7,000 feet above the level of sea; rarely along the shores of the sea or rivers. We met with this species in Bogosland, in Central Abyssinia, in the steppes of East Sennaar, Fazogloa, &c."

My friend Mr. W. Jesse, C.M.Z.S. has very kindly favoured me with a few notes on the present species, which he met with during his excursion into the Bogos Country. He writes "I have before me eleven specimens of this beautiful little Kingfisher, three from Maragaz, three from Waliko, two from Gabena-Weldt-Gonfallon, and three from Bejook, all on the River Anseba. These localities do not cover a distance of more than twenty-five miles, so that but for a wish to adhere as far as possible with exactitude to all particularities whether locality, habits, or ought else in connection with my Abyssinian collections, I might for all practical purposes have given the Anseba River as the locality. During the Abyssinian expedition, from the month of February, 1868, till the middle of June, 1868, I never observed this species, though carrying on my researches from Zoulla to Attegerat and back in that time; nor in the valleys to the right and left of the route up the passes, nor in those at the back of Senafe. I also believe I am correct when I state that Mr. W. T. Blanford, Geologist to

the expedition, who accompanied the army up to Magdala and back, never met with this species though he was on the banks of Lake Ashanghi and on the Takazzi River. It was not until Mr. Blanford and I re-entered the country from Massuah by the valley of the Lebka over into the Anseba valley that we met with *Ispidina picta,* during the months of July and August, and the only locality besides the Anseba Valley where I saw it was on our return to Massuah on the Lebka a little below Kokai, where I saw one specimen but did not obtain it. I never observed it further than a mile or two from water, and most generally on the banks of the Anseba itself. At the period when met with, I concluded it was breeding though I never succeeded in finding the nest. It is insectivorous, and grasshoppers or small locusts seem to form the principal part of its food. When flying rapidly among the bushes it uttered a sharp 'cheep cheep' repeated very quickly; the flight was exactly similar to that of *Alcedo ispida.* Mr. Blanford obtained one specimen with some black about the bill, doubtless an immature bird."

The description is taken from a beautiful West African skin in my collection, while the plate represents a specimen in the Leiden Museum.

ISPIDINA NATALENSIS, ad. & juv.

ISPIDINA NATALENSIS.

(NATAL KINGFISHER.)

Alcedo natalensis, ...	Smith, S. Afr. Quart. Journ. No. V., p. 14 (1831).
Ispidina natalensis, ...	Sharpe, Ibis, 1869, pp. 281, 283.
Ispidina nitida, ...	Kaup, Fam. *Alced.* p. 13 (1848).
Alcedo nitida, ...	Gray, Cat. Fiss. Brit. Mus. p. 65 (1848).
Corythornis nitida	Bonap. Consp. Vol. Anis. p. 10 (1854).
Alcedo picturata	Schl. Mus. Pays Bas, *Alced.* p. 16 (1863).
Alcedo nutans, ...	Bianc. Spec. Zool. Mosamb. fasc, XVIII, p. 320 (*nec Vieill.*).
Alcedo picta, ...	Jard. Edinb. New Philos. Journ. n. s. III, p. 242 (*nec Bodd.*).
Ispidina picta, ...	Gurney, Ibis, 1859, p. 246 (*nec Kaup*).
Halcyon cyanotis	Layard, Birds of S. Afr. p. 64 (*nec Swains.*).

I. pileo nigro, ultramarino fasciato: abdomine aurantiaco: maculâ post-auriculari lætè cyaneâ.

Hab. in Africâ eur-australi.

Crown of the head black, barred with rich ultramarine; a line of feathers extending from the base of the nostrils backwards over the eye, cheeks, sides and back of the head rich lilac rufous; a patch of feathers behind the ear rich ultramarine; wing-coverts black washed with ultramarine; primaries brownish-black, their inner webs light rufous at the base; upper surface of the tail rich ultramarine, under surface black; throat white; rest of the under-surface of the body bright orange-red; bill rich coral-red; feet red; irides dark brown. Total length 4 inches, of bill from front 0.9, from gape 1.1, wing 2.1, tail 0.9, tarsus 0.25, middle toe 0.4, hind toe 0.2.

Hab. Natal (*Ayres*), Mosambique (*Bianconi*), Caffraria (*mus. Lugd.*) Zambesi River (*mus. R. B. Sharpe*).

The chief characters which distinguish the present species from *Ispidina picta* of Abyssinia and Western Africa, are the stouter beak, the brighter plumage, and especially, the bright blue spot behind the ear, which forms a conspicuous and characteristic feature. As pointed out by me in my recent paper in the "Ibis," Kaup's *Ispidina nitida* is the young bird, of which the hinder figure in the accompanying plate, taken from Kaup's type

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Additional references.—*Alcedo natalensis*, Layard, Birds of S. Afr. p. 66 (*ex Smith*). *Alcedo nitida*, Gray, Gen. of Birds, App. p. 5 (1848); Hartl. Journ. f. Orn. 1854, p. 4, Müll. Journ. f. Orn 1855, p. 9, Hartl. Orn. Westafr. p. 36 (1857). *Ispidina nitida*, Reich. Handb. *Alced.* p. 6 (1851). *Alcedo picta*, Hartl. and Finsch, Orn. Ostafr. p. 171 (*nec Bodd.*).

in the British Museum is a faithful representation. Professor Schlegel's *Alcedo picturata* is all also a synonym.

The habits of the present bird closely resemble those of *I. picta*, as will be seen by the accompanying note by the indefatigable Mr. Ayres:—

"These birds feed entirely on butterflies and insects caught on the wing; frequent the dense bush, and are often seen along the streams, but never catch fish."

Sir Andrew Smith relates that it "inhabits the banks of rivers, &c., to the eastward of Cafferland."

The description and measurements are from Zambesi specimens in my own collection. The right-hand figure in the plate, representing an adult male is taken from a specimen collected in Natal by Mr. Ayres, and kindly lent to me by Mr. Gould. The left hand figure of the young bird represents the type of Kaup's *Ispidina nitida*.

ISPIDINA RUFICEPS.

ISPIDINA RUFICEPS.

(AGUAPIM KINGFISHER.)

Ispidina ruficeps, ... Hartl. Orn. Westafr. p. 262. (1857).
Alcedo Lecontei, ... Schl. Mus. Pays. Bas, *Alced.*, p. 16. (1863).

I. dorso læte ultramarino: pileo rufo lilacino punctato.

Hab. in Africâ occidentali.

Forehead black; head and nape rufous with a bright lilac tip to each of the feathers, and a beautiful lilac lustre on the sides of the head; back and scapularies very rich ultramarine; wing-coverts black, spotted with ultramarine; wing-feathers and tail blackish; throat white; a small spot in front of the eye, cheeks and under-surface of the body orange-rufous; bill and feet coral-red. Total length 3.8 inches, of bill from front 1.0, from gape 1.3, wing 1.8, tail 0.7.

Hab. Aguapim *(Riis, mus. Basel.)*, Gold Coast *(Nagtlas, mus. Lugd.)*

This curious little species was described by Dr. Hartlaub, in 1857, from a single specimen in the Basel Museum, and is one of the most interesting of the recent additions to the Æthiopian Avi-fauna.

I must here record my obligation to Dr. Peter Merian, the well known Director of the above-named Museum, for his kindness in allowing me to describe and figure the type-specimen. He will at the same time receive the thanks of all Ornithologists for thus enabling a figure to be given of this rare and interesting species.

I have not given the measurements of the tarsus and feet of the present specimen, as I believe that the legs now attached do not really belong to it. Dr. Hartlaub seems to have measured them in his original description, yet it has escaped the learned doctor's observation that the extraordinary length of the tarsus would ill accord with the usual short one of the genus *Ispidina*. In reply to my enquiries, Dr. Merian could give me no satisfactory information respecting the legs. He is of opinion that they have not been tampered with, but cannot affirm this with certainty. As, however, the legs are not attached to the body of the bird, it is probable that those of some other species have been

substituted. From the sketches made by Mr. Keulemans of Professor Schlegel's *Alcedo Lecontei* in the Leiden Museum, it is evident that the bird so named is identical with the present species. *I. Lecontei* so far as I can discover, is only known from the original specimen in the Museum of the Philadelphia Academy

The description and measurements are taken from the type specimen, from which also the figures are drawn.

CERYLE (SPIDINA) LECONTEI.

ISPIDINA LECONTII.

(LECONTE'S KINGFISHER).

Ispidina Lecontei, ... Cass. Proc. Acad. Nat. Sci. Philad. 1856, p. 158; Hartl. Orn. Westafr. p. 35 (1857); Du Chaillu, Eq. Afr. p. 472 (1861); Sharpe, Ibis, 1869, p. 283.

I. rostro simo: abdomine rufo: dorso cyaneo: fronte nigro.

Hab. in pro. Gabonensi Africæ occidentalis.

Male. Front black (without spots), crown and occiput blueish black with small spots of light blue, with a purple tinge, a narrow partially concealed collar of rufous on the neck behind; wing-coverts black, with small purplish-blue spots; quills blueish-black, edged with rufous on their inner webs; tail blueish-black; a small spot in front of the eye, cheeks breast and abdomen yellowish rufous, darker on the breast; throat white, under wing-coverts rufous; upper mandible brownish black, point white; under mandible at the base yellow, then dark brown towards the point but at the tip white; legs yellow. Total length (of skin) $3\frac{3}{4}$ inches, wing 1·8-10ths, tail 9-10ths, bill in front 1, width of bill at nostrils 3-10ths inch (*Cassin*).

Hab. Moonda River, Gaboon (*Du Chaillu*).

This Kingfisher is so rare that I have never myself seen a specimen, nor do I know of one in Europe at the present moment The original bird is in the Philadelphia Academy, and the description above-given is that recorded by Mr. Cassin of the typical example. The following remarks accompanied his account of the species:—

"This little bird may readily be distinguished from either of the species of minute Kingfishers of the genera *Ispidina* and *Corythornis* previously known, by its much broader and flat bill, which is long and quite as flat as in any species of *Todirhamphus*, The frontal feathers are clear lustrous black to the base of the upper mandible, and unspotted. It is, moreover, the smallest of all those species."

I have delayed the publication of the present bird till nearly the last in my work in the hopes that a specimen would arrive from Gaboon and allow of my giving a figure of it from a recent skin. This has unfortunately not occurred, and the species must have been left unfigured had it not been for the kindness of Dr. Turnbull of Philadelphia, who, on learning that I was in want of information respecting the bird, most kindly sent me a coloured lithograph taken from the type-specimen. From this drawing the plate in the present work has been designed by Mr. Keulemans.

SYMA TOROTORO. ♀ & ♂.

SYMA TOROTORO.

(SAW-BILLED KINGFISHER.)

Syma torotoro, . . .	Lesson, Voy. Coq. Zool. I, p. 689, pl. 31 bis (1826).
„ *lessonia*, . . .	Swains. Classif. of Birds, II, p. 334 (1837).
Halcyon torotoro, . . .	Gray and Mitch. Gen. of Birds, I, p. 79 (c. 1844).
Todiramphus torotoro, . . .	Cassin, Cat. Halc. Phil. Mus. p. 12 (1852).
Dacelo torotoro, . . .	Schlegel, Mus. Pays Bas, *Alced.* p. 23 (1863).
Dacelo syma, . . .	S. Müller" Schlegel, ut suprà.

S. major: pileo aurantio-rufo: rostro toto flavissimo: caudâ lætè indigoticâ: tectricibus alarum viridi-cœrulescentibus. *Fem.* fronte et pileo medio nigris, et vittâ nuchali nigrâ distinguenda.

Hab. in Novâ Guineâ, et in insulis adjacentibus.

Male.—Head and neck deep orange-red; a patch of feathers round the front of the eye, a longitudiual patch of feathers along the side of the neck, and the upper part of the back black; scapularies and wing-coverts greenish; wing-feathers brownish-black, the inner web light rufous from the base, the outer web narrowly edged with greenish; lower part of the back greenish-blue; upper surface of the tail indigo, under surface black; chin white; entire under surface rich orange, a little paler on the abdomen; bill and feet orange-yellow. Total length 8 inches, of bill from front 1.3, from gape 1.9, wing 3.1, tail 2.6, tarsus 0.5, middle toe 0.6, hind toe 0.3.

Female.—Similar to the male, but the crown of the head black from the base of the bill to the occiput, and a black half-collar round the back of the neck.

Hab. New Guinea: Dorey (*Lesson*), Lobo (*Müller*), Aru Islands (*Wallace*), Waigiou, (*Wallace*), Mysol (*Wallace*).

This bird is very rarely met with in European Museums, and we know little of its habits. The curious serrated mandible, on which the genus Syma is principally founded, is well shewn by Mr. Keulemans in the plate. Some specimens exhibit this peculiarity more developed than others.

Lesson says:—"This bird dwells by the side of the sea, along the mangroves (*Bruguiera.*) It skims over the strand in its flight to seize the little fishes, which its beak,

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Additional References.—*Syma torotoro*, Lesson, Traité d'Orn. p. 244 (1831) Müller, Verh, Ethn. p. 22 (1839) Bonap. Consp. Gen. Av. I, p. 153 (1850), id. Consp. Vol. Anis. p. 9 (1854) Reich. Handb. *Alced.* p. 43, t. ccccxxx, fig. 3173 (1851), Gray, P. Z. S. 1858, p. 172, id. P. Z. S. 1861, p. 433, Rosenb. Journ. f. Orn. 1864, p. 118. *Halcyon torotoro*, Sclater, Proc. Linn. Soc. 1858, p. 156. *Todiramphus torotoro*, Cassin, U. S. Expl. Exp. p. 222 (1858). *Dacelo torotoro*, Schlegel, Vog. Ned. Ind. pp. 19, 52, pl. 6 (1864).

strongly indented, prevents from escaping. We observed several individuals flying and skimming along the little rivulets which fall into the harbour at Doréry in New Guinea. The Papuan natives call it *torotoro*, doubtless with reference to its cry."

I have always thought this account of Lesson's of the present species feeding on fish, and flying over the rivers untrustworthy, as it is so contrary to what would be expected of the bird, and directly in opposition to my ideas on the nature of the birds' habits. My opinion is confirmed by the following note which Mr. Wallace has given me concerning it.

He observes:—"This species was always rare, and I know nothing about its habits, except that it occurred in thick forest, in similar places to those frequented by the *Tanysiptera* which it appears somewhat to resemble in its habits." According to the little we know too of the economy of the allied species, *S. flavirostris*, from Australia, we should certainly expect the present bird to be strictly confined to the forest.

The front figure in the accompanying plate represents a very fine female from Waigiou in Mr. Wallace's collection, while the distant bird is a male also in his collection, from the Aru Islands. I have taken my description and measurements from these specimens.

SYMA FLAVIROSTRIS, ♀ & ♂.

SYMA FLAVIROSTRIS.

(AUSTRALIAN SAW-BILLED KINGFISHER.)

Halcyon (Syma ?) flavirostris, . .	Gould, P. Z. S. 1850, p. 200.
„ „ „ . .	„ Contr. to Orn. 1850, p. 105.
Halcyon flavirostris, . .	„ Birds of Austr. Suppl. pt 1, pl. — (1851).
Syma flavirostris, ...	Reich. Handb. *Alced.* p. 44, t. ccccxxx, fig. 3171-72 (1851).
„ „	Gould, Handb. Birds of Austr. I, p. 135 (1865).
Halcyon torotoro	Macgill. Voy. Rattl. II, p. 356 (1852).

S. minor : pileo aurantio-rufo : rostro flavo, culmine versus apicem nigro : caudâ viridi-cœruleâ : tectricibus alarum viridi-fuscis.—*Fem.* pileo medio nigro et vittâ nuchali nigrâ distinguenda.

Hab. in peninsulâ Australiæ septentrionalis "Cape York" dictâ.

Male.—Head and neck orange-rufous ; a little patch of feathers in front of the eye, a longitudinal stripe of feathers on each side of the neck, and the upper part of the back, black ; scapularies and wing-coverts dusky-greenish ; wing-feathers blackish, the inner web rufous from the base ; lower part of the back and upper surface of the tail greenish-blue, under surface of the latter blackish-brown ; chin white ; under-surface of the body light orange, paler on the abdomen ; bill yellow, the culmen brownish-black ; feet orange. Total length 7 inches, of bill from front 1.3, from gape 1.8, wing 2.8, tail 2.4, tarsus 0.4, middle toe 0.6, hind toe 0.05.

Female.—Similar to the male, but a trifle larger, the colours more dingy, and the middle of the crown of the head black ; the black stripe at the sides of the neck more distinct and forming a complete band in some specimens.

Hab. Cape York Peninsula, N. Australia *(Macgillivray).*

I have examined many specimens of this rare Kingfisher, and believe it to be quite distinct from the allied species *Syma torotoro* from New Guinea. By Dr. Sclater and Professor Schlegel the present species has been considered to be only the young of the New Guinea bird, but at the time that, Dr. Sclater wrote, *Syma torotoro* was only known from Lesson's figure in the "Zoologie" of the Voyage of the Coquille. But we are now well acquainted with both species, and I have lying before me at the present moment four specimens of *Syma flavirostris* out of my own collection, and a very beautiful pair of *Syma torotoro* procured by Mr. Wallace, and kindly lent to me out of his collection. I find that the present species is altogether smaller and less brightly coloured than its New Guinea

representative, and may at once be distinguished by the bill. In *S. torotoro* both mandibles are rich orange-yellow, while in *S. flavirostris* the bill is lighter yellow and has the culmen brown towards the tip. In the females of the two species, however, I find a difference which seems to have hitherto escaped the notice of Ornithologists. The female of *S. torotoro* is black on the top of the head from the base of the bill to the occiput, while the female of *S. flavirostris* has the forehead orange and only the middle of the head black. This difference is well exhibited by Mr. Keulemans in the plates accompanying the descriptions of these two Kingfishers.

The present species appears to be very rare even in Australia. In a letter dated April 7th, 1868, my friend Mr. E. P. Ramsay of Dobroyde, near Sydney, N.S.W. writes to me, "*S. flavirostris* is very rare; I have only met with one and that a very bad skin."

The following very interesting note of Mr. Macgillivray's is extracted from Mr. Gould's "Handbook" *(l.c.)*:—

"The *Poditti*, as it is called by the aborigines, appears to be a rare bird; for although it was much sought for, not more than four or five examples were obtained during our stay. Like the *Tanysiptera sylvia*, it is an inhabitant of the brushes, while the *S. torotoro* of New Guinea is a mangrove bird. I myself saw it alive only once, in a belt of tall trees, thick underwood and clumps of the *Seaforthia* palm fringing a small stream about three miles from the sea. Attracted by the call of the bird which was recognised by the accompanying natives as that of the much-prized *Poditti*, three or four of us remained for about ten minutes almost under the very tree in which it was perched, intently looking out for the chance of a shot, before I discovered it on a bare transverse branch, so high up as scarcely to be within range of small shot; however, it fell, but our work was only half over, as the wounded bird eluded our search for a long time; at length one of our sable allies—his eyes brightened, I dare say, by visions of a promised axe, discovered it lying dead in a corner to which it had retreated. The more intelligent natives whom I questioned separately agreed in stating that its mode of nidification is similar to that of the *Tanysiptera sylvia*, and that, like that species, it lays several white eggs."

The figures in the plate represent a pair in my own collection from Cape York Peninsula, and the descriptions and measurements are also taken from the same birds.

HALCYON COROMANDA

HALCYON COROMANDA.

(RUDDY KINGFISHER.)

Le martin pêcheur violet des Indes .	Sonn. Voy. Ind. II, p. 212, pl. 118.
Alcedo coromanda	Lath. Ind. Orn. I, p. 252 (1790, *ex.* Sonn.); Horsf. Trans. Linn. Soc. XIII, p. 174 (1822); Hadf. Zool. 1857, p. 5795.
Halcyon coromandus . . .	Steph. Gen. Zool. XIII, p. 100 (1826).
Dacelo coromanda	Less. Traité d'Orn. p. 246 (1831).
Halcyon coromanda . . .	Gray, Cat. Mamm. & B. of Nep. p. 56 (1846); Cass. Cat. Halc. Phil. Mus. p. 55 (1852); Gray, Cat. Mamm. & B. of Nep. p. 24 (1863).
Callialcyon coromanda . . .	Reich. Handb. *Alced.* p. 15, t. ccccv, fig. 3092 (1851).
Callalcyon coromanda . . .	Bonap. Consp. Vol. Anis. p. 9 (1854).
Halcyon coromandeliana . .	Gray, Cat. Fiss. Brit. Mus. p. 55 (1848); Horsf. & Moore, Cat. B. Mus. E. I. Co. I, p. 126 (1854); Swinh. Ibis, 1863, p. 259; id. P.Z.S. 1863, p. 333; id. Zool. 1863, p. 8747; Beav. Ibis, 1867, p. 319.
Dacelo coromandeliana . . .	(pt.) Schl. Mus. Pays Bas, *Alced.* p. 25 (1863); id. Vog. Ned. Ind. *Alced.* pp. 24, 56, pl. 8 (1864).
Halcyon coromandelianus . .	Bulger, Ibis, 1869, p. 155.
Halcyon coromandelicus . .	Vig. App. Mem. Raffl. p. 654 (1830).
Halcyon coromander . . .	Blyth, Cat. B Mus. As. Soc. Beng. p. 47 (1849),
Halcyon coromanda minor . .	Temm. & Schl. Faun. Jap. Aves. p. 76 (1850).
Alcyon calipyga	Hodgs. in Gray's Zool. Misc. p. 82 (1831).
Halcyon lilacina	Swains. Classif. of B. II, p. 335 (1857); Bonap. Consp. Gen. Av. I, p. 156 (1850); Motl. and Dillw. Nat. Hist. of Lab. p. 13 (1855); Sclater, P.Z.S. 1863, p. 213.
Callalcyon lilacina . . .	Bonap. Consp. Vol. Anis. p. 9 (1854)
Halcyon Schlegeli	Bonap. Consp. Gen. Av, I. p. 156 (1853).
Halcyon coromanda major . .	Temm. and Schl. Faun. Jap. Av. p. 75 (1850).
Dacelo coromandeliana major . .	Schl. Mus. Pays Bas, *Alced.* p. 25 (1863).
Halcyon rufa	Wall. P.Z.S. 1862, p. 338.

H. rostro toto rubro: pulchrè lilacina: dorso postico lætè cyaneo.

Hab. in regione Indo-Malayana, in insulâ "Celebes" dictâ, et in insulis Japonicis.

General colour rufous, glossed everywhere with brilliant lilac; lower part of the back and rump white washed with cobalt, and somewhat tinged with lilac; chin white; rest of the under surface of the body pale rufous, washed with lilac on the breast, inclining to buff on the belly.

Hab. Along the foot of the Himalayas in Nepal and Sikim, in the Sunderbuns and along the east of the Bay of Bengal (*Jerdon*); Teesta River, Sikim (*Bulger*); Andaman Islands (*Tytler, Beavan*); Penang (*mus. R.B.S.*); Malacca (*mus. R. Swinhoe*); Java (*Horsfield*); Banjermassing (*Motley*); Labuan (*Motley and Dillwyn*); Philippine Islands (*mus. Luyd.*); Formosa (*Swinhoe*); Japan (*Siebold*); Celebes (*Wallace*).

This species has been called *Halcyon coromandeliana* by most ornithologists, as they have supposed that the *Alcedo coromandeliana* of Scopoli was founded on Sonnerat's 118th plate. A close examination of the text, however, shows that this is not the case, and I do not think I can more clearly state the facts than by giving an extract from the last letter addressed to me on the subject by Lord Walden, whose skill in determining the descriptions given by the older authors is well known to all ornithologists. I quote as follows:—

"In the 'Specimina Zoologica' of Scopoli occur some of the most curious and flagrant inaccuracies to be found among the older authors. *Alcedo coromandeliana*, Scop. No 53, is described from Sonnerat's 119th plate, *Guepier jaune de la côte de Coromandel*, notwithstanding that Scopoli quotes p. 212, t. 118, where the description and plate of the 'Coromandel Kingfisher' of Latham are given. The odd thing, too, is that Scopoli classes it rightly among the Kingfishers. After the specific description of his so-called *Alcedo coromandeliana* comes what he terms the 'character generis' of the species. This, you will find, is taken from the introductory remarks of Sonnerat on the affinities of the Bee-eaters to the Kingfishers (Voy. Ind. p. 213). But what is more odd still is, that Scopoli further on (No. 66) gives another title to *Guepier de la côte de Coromandel*, calling it *Certhia lutea*, and quoting the page and plate correctly. The subject of Sonnerat's 119th plate is of course a xanthonism of *Merops viridis*. Latham quotes both of Sonnerat's plates correctly—Pl. 118 is his *Alcedo coromanda*, and Pl. 119 *Merops coromandus*."

"Scopoli made a similar kind of blunder under his title of *Muscicapa malabarica (Dissemurus)*. In the diagnosis he correctly describes Sonnerat's 111th plate, but the more detailed description is of Sonnerat's next species, *Gobe-mouche à longue queue de Gingi —Turdus* (*Kittacincla*) *macrourus* (Gm.)."

From the above reasons it follows that the name of *H. coromandelianus* (Scop.) must be rejected, and the name of *H. coromanda* (Lath.) must be retained. Of course it is difficult at this period of time clearly to make out the exact locality from whence Sonnerat's bird really came, but I believe it most likely to have been from Malacca; on the coast of Coromandel it certainly never occurs. Taking, therefore, the small form which is distributed throughout the Indo-Malayan sub-region as the type of the species, we may apply the name of *H. coromanda* to the bird found throughout all these countries. In Japan a slightly larger form occurs, which has been separated by Bonaparte as *H. Schlegeli*, while in Celebes a still larger form is found, differing also in the extreme brilliancy of its colours. This is the *H. rufa* of Wallace.

It will be seen that I do not award specific rank to either *Halcyon Schlegeli* nor to *H. rufa*, as they are at best only larger races of the ordinary Indo-Malayan *H. coromanda*, nor have I arrived at this conclusion without a careful consideration of the subject, and after an examination of the finest series of Ruddy Kingfishers ever brought together in any one country in the world, my own collection alone containing no less than fourteen specimens from all localities. In addition to this, I was enabled through the kindness of Mr. Wallace, Mr. Swinhoe, and other friends, to take with me for comparison with the fine series at Leiden all the specimens contained in their cabinets, so that on arriving at the Leiden Museum I had before me at least forty examples from every locality where the species has yet been met with.

In size the Japanese Ruddy Kingfisher is slightly superior to the ordinary form of *Halcyon coromanda*, found throughout the Indo-Malayan sub-region, and the general colora-

tion is somewhat duller, but it is impossible to draw any exact line of demarcation, for the Formosan bird ought, according to its size, to be ranked as intermediate between the birds from Japan and Celebes, though it has the dull colour of the former instead of the bright coloration of the latter sub-species. The Philippine Ruddy Kingfisher is also dull-coloured.

The sub-species from Celebes is the most brilliant of all the Ruddy Kingfishers, and has the reddish colour of the under surface continued right up to the throat, and has also the blue of the lower part of the back much more extended, but neither of these characters, though sufficiently distinct in the adult, are thoroughly constant, and every gradation can be found. In the Celebean sub-species, certainly, the extent of the red on the throat increases with age, and, judging from the material I have examined, it is the case with the Indo-Malayan bird also. In the young plumage the breast is barred and the back-streak is almost entirely white, while in the older birds this becomes brilliant cobalt, having occasionally a slight lilac tinge. The colours fade on exposure to the light.

The following measurements clearly show the relative size of these sub-species:—

No.	Name.	Sex.	Locality.	Long tot.	Rostr.	Alæ.	Tarsi.
1	Halcyon coromanda	ad.	Penang. (*mus R. B. S.*)	10·0	2·3	4·2	0·5
2	„ „	ad.	Malacca.(*mus R. Swinhoe.*)	9·3	2·1	4·7	0·5
3	„ „	♂	Sumatra. (*mus R. B. S.*)	10·0	2·1	4·1	0·5
4	„ „	♀	Sumatra. (*Wallace.*)	9·0	2.1	3·8	0·5
5	„ „	ad.	Labuan. (*Motley*).	10·0	2 1	4·0	0·5
6	„ „	ad.	Formosa. (*Swinhoe.*)	10 0	2·3	5·0	0·5
7	„ „	ad.	Japan (*Siebold*).*	10·5	2·2	4·7	0·5
8	„ „	juv.	Japan (*Siebold*).*	10·0	1·9	4·6	0·5
9	„ „	♂	Macassar. (*Wallace*).†	11·0	2 4	4·7	0·55
10	„ „	♂	Menado. (*Fraser*).	10·0	2·4	4·3	0·55

* Types of *H. schlegeli*. † Type of *H. rufa*.

In India its range is thus given by Dr. Jerdon (*l.c.*) :—

"This lovely Kingfisher is found along the foot of the Himalayas, in Nepaul and Sikim ; also in the Sunderbuns, and along the eastern coast of the Bay of Bengal. I much doubt if it has been found in the south of India, albeit named from the Coromandel coast. I obtained one specimen from the banks of the Teesta River in Sikim, and Mr. Blyth has seen it *en route* from Calcutta to Burdwan."

It appears to be a rare bird in Sikim, where it was obtained by Captain Bulger, who observes (*l.c.*) :—

"I only obtained one specimen of this most lovely bird, from the Teesta River, and the Shikaree regarded it as a great prize. The amethystine lustre of its plumage is wonderfully beautiful, rendering it, in my opinion, the handsomest of the whole family."

Mr. Swinhoe informs us that this species "appears to be resident in Formosa, inhabiting the lakes and rivers of the interior of the island, but is by no means common."

In the Andaman Islands it is a common bird, according to Colonel Tytler.

The late Mr. Motley, so well known for his researches into the economy of Bornean birds, writes as follows :—

"The habits of the Labuan Kingfishers appear to be much alike ; they feed almost entirely at sea, and although many of the brooks abound with small fish they are very seldom to be seen far from the beach. A person walking along the shore at high water may often see them dart out of the jungle and dash into the water, seize their prey, and carry it off again among the trees. They never perch on stones or bare branches over the water, like the European species."

The description is taken from a Penang specimen in my collection, of which the hinder figure in the plate is a representation. The front figure in the plate represents the type of *Halcyon rufa*, and is taken from the specimen in Mr. Wallace's collection, which he kindly lent to me.

HALCYON BADIA.

HALCYON BADIA.

(CHESNUT KINGFISHER.)

Halcyon badia, ...	Verr. Rev. et Mag. de Zool. 1851, p. 264.
Dacelo badia, ...	Schl. Mus. Pays Bas. *Alced.* p. 28 (1863).
Halcyon cancrophaga ? . . .	Strickl. Contr. Orn. 1851, p. 134.

H. rostro rubro: caudâ longiori: pileo castaneo-rufo: minor: scapularibus castaneis: subtus omninò alba.

Hab. in Africâ occidentali.

Above chesnut red; wing coverts black, tinged with chesnut; wing-feathers blackish, the inner web whitish from the base; the secondaries rich blue near the base, forming a broad band across the wing; lower part of the back, upper tail coverts and upper surface of the tail rich cobalt, the latter with a black band along the tip, under surface blackish; cheeks and sides of the neck deep chesnut; entire under surface white; bill and feet deep vermilion red. Total length 7.5 inches, of bill from front 1.5, from gape 1.9, wing 3.7, tail 2.3, tarsus 0.4, middle toe 0.6, hind toe 0.3.

Hab. Sierra Leone *(mus J. Gould)*, Gaboon (*Verreaux*), River Ogobai (*Du Chaillu*).

This very distinct species of *Halcyon* belongs to the chesnut headed group, containing *H. fusca*, *H. gularis*, and *H. badia*. From both of these allied species the present bird may be easily distinguished by its smaller size, chesnut scapularies, and entirely white under-surface.

The Messrs. Verreaux in their original description state that this Kingfisher is "very rare in the forests of Gaboon, where it feeds on insects."

To Mr. Gould I am indebted for a present of the bird, from which the description is taken, while the figure is drawn from the only specimen in the Leiden Museum. This from the markings on the breast appears to be immature.

Additional References.—*Halcyon badia*, Hartl. Journ. f. Orn. 1854, p. 3, id. Orn. Westafr. p. 33 (1857), Müller, Journ. f. Orn. 1855, p. 8, Cass. Proc. Phil. Acad. 1859, p. 34, Heine, Journ. f. Orn. 1860, p. 187, Hartl. Journ. f. Orn. 1861, p. 105, Du Chaillu, Equ. Afr. p. 472 (1861).

HALCYON SMYRNENSIS.

HALCYON SMYRNENSIS.

(WHITE-BREASTED KINGFISHER.)

Martin-pecheur de la cote de Malabar . . .	Buff. Pl. Enl. 894.
Alcedo smyrnensis	Linn. Syst. Nat. I, p. 181 (1766.)
Halcyon smyrnensis	Steph. Gen. Zool. XIII, p. 99 (1826).
Dacelo smyrnensis	Less. Traitè d'Orn. p. 246 (1831.)
Entomothera smyrnensis	Reich. Handb. *Alced.* p. 13 (1851.)
Entomobia smyrnensis	Cab. & Heine, Mus. Hein. th. II, p. 155, note (1860.)
Alcedo fusca	Bodd. Tabl. Pl. Enl. p. 54 (1783.)
Entomothera fusca	Reich. Handb. *Alced.* p. 12, t. cccciv; fig. 3088-89 (1851.)
Entomobia fusca	Cab. & Heine, Mus. Hein. th. II, p. 155 (1860.)
Dacelo fusca	Schl. Mus. Pays Bas, *Alced.* p. 28 (1863.)

H. rostro toto læte rubro: pileo rufo-castaneo: dorso postico lætissimè viridi-cyaneo: scapularibus viridi cyaneis: gutture et pectore medio albis.

Hab. in parte australi regionis Palæarcticæ et in totâ regione Indicâ.

Adult. Entire head and neck rich chesnut; back and scapularies vivid greenish cobalt, brighter on the rump; least wing-coverts chesnut, lesser ones black, greater coverts black, edged with deep greenish blue; primary coverts rich cobalt; quills black, white at the base, the basal half of the outer web of the primaries and the whole of the outer web of the secondaries rich cobalt; tail bright cobalt above, black beneath; entire throat and chest, as well as the edge of the wing-joint, pure white; sides and lower part of the body deep chesnut; bill coral-red; feet vermillion; eyes brown.

Additional references.—*Alcedo smyrnensis*, Gm. S. Nat. I, p. 457 (1788), Var. γ. Lath. Ind. Orn. I, p. 248 (1790), Bon et Vieill. Enc. Meth. I, p. 286 (1823.) *Alcedo smyrnensis*, Eyton, P.Z.S. 1839, p. 101, Macdell. P.Z.S. 1839, p. 156, Vigne, P.Z.S. 1841, p. 6. *Halcyon smyrnensis*, Sykes, P.Z.S. 1832, p. 84; Strickl. Ann. Nat. Hist. 1842, p. 443; Gray, Gen. of B. I. p. 79 (1846); id. Cat. Fiss. Brit. Mus. p. 55 (1848); Blyth, Cat. Birds Mus. As. Soc. Beng. p. 47 (1849); Bonap. Consp. Gen. Av. I, p. 155 (1850) Cass. Cat. Hale. Phil. Mus. p. 6. (1852); Burgess, P.Z.S. 1852, p. 28; Moore, P.Z.S. 1854, p. 268; Horsf. & Moore, Cat. B. Mus. E. I. Co. I, p. 125 (1854); Phillips, P.Z.S. 1857, p. 67; Swinh. P.Z.S. 1863, p. 269; Jard. Mem. of Strickl. II, p. 316 (1858); Adams, P.Z.S. 1858, p. 474; Swinh. Ibis. 1860, p. 49; Mason, Burm. p. 671 (1860); Swinh. Ibis, 1861, p. 31; Irby, Ibis, 1861, p. 227; Day, Land of Perm. p. 460 (1863); Tristr. Ibis, 1866, p. 86; Blyth, Ibis, 1866, p. 348; Beav. Ibis, 1867, p. 319. *Alcedo fusca*, Martens, Journ f. Orn, 1866, p. 18. *Halcyon fusca*, Gray, Gen. of B. I, p. 79 (1846); id. Cat. Fis. Brit. Mus. p. 55 (1848); Bonap. Consp. Av. I, p. 155 (1850); Cass. Cat. Halc. Phil. Mus. p. 6 (1852); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 125 (1854); Beav. Ibis. 1865, p. 409; Pelz. Voy. Nov. Vög. p. 49 (1865); Blyth, Ibis, 1866, p. 348. *Dacelo fusca*, Heugl. Orn. N. O. Afr. I, p. 188, (1869).

HALCYON GULARIS.

HALCYON GULARIS.

(WHITE-THROATED KINGFISHER.)

Grand Martin-pêcheur de Madgascar .	Buff. Pl. Enl. 232.
Alcedo smyrnensis, var. b. . . .	Gm. Syst. Nat, I, p. 456 (1788).
Alcedo gularis	Kuhl, Buff. and Daub. Fig. Av. Col. Nom. Syst. p. 4 (1820).
Halcyon gularis	Gray, Gen. of B. I, p. 79 (1846); Kaup, Monogr. *Alced.* p. 8 (1848); Bonap. Consp. Gen. Av. I, p. 155 (1850); Gould, B. of Asia, part XIII (1861).
Entomothera gularis	Reich. Handb. *Alced.* I, p. 13, t. cccci, fig. 3082 (1851).
Entomobia gularis	Cab. & Heine, Mus. Hein. th. II, p. 155 (1360).
Alcedo rufirostris	Kittl. Kupf. Vög. p. 10, t. 14, fig. 2 (1832); Meyen, Beitr. p. 94 (1834).
Alcedo melanoptera	Temm. Tabl. Meth. p. 75 (1836 *nec Horsf.*).
Halcyon ruficollis	Swains. Classif. of B. II, p. 335 (1837).
Halcyon smyrnensis var. albogularis .	Blyth, Journ. As. Soc. Beng. 1843, p. 998; et 1844, p. 394.
Halcyon fusca	Cass. Cat. Halc. Phil. Mus. p. 6 (1852, *nec Bodd*).
Alcedo fusca	Martens, J.f.O. 1866, p. 16; et Preuss. Exp. p. 189 (1867, *nec Bodd*).

H. pileo et abdomine castaneis: gutture circumscriptè albo.

Hab. in insulis Philippinis.

Head and neck dark chesnut; back and scapularies cobalt, especially bright on the rump; wing-coverts jet black; the edge of the wing white; primary-coverts cobalt; quills black, the inner web white at the base, the outer web, especially of the secondaries, bright cobalt; tail cobalt above, black beneath; throat pure white; cheeks, ear-coverts, and rest of the under surface of the body deep chesnut, with a few blue feathers on the lower part of the flanks; bill and feet rich coral-red. Total length 9·5 inches, of bill from front 1·3, from gape 1·6, wing 4·8, tail 2·9, tarsus 0·4, middle toe 0·65, hind toe 0·3.

Hab. Philippine Islands (*mus. R.B.S.*); Luzon (*Kittlitz*).

The figures which accompany this article sufficiently illustrate the differences between the present bird and its nearest ally, the White-breasted Kingfisher (*Halcyon smyrnensis*). The trivial names which I have selected also serve to characterize the two species, and I may add that, besides the difference in the extent of white on the throat, the Philippine bird is altogether darker in plumage.

It is now generally admitted that the old authors were in error when they assigned Madagascar as the habitat of the present species. There can, indeed, be little doubt on this point, and the discovery of its true habitat removes an obstacle which might, if not thus summarily dispelled, have qualified very materially the conclusions we are now accustomed to draw as to the zoological affinities of the fauna of Madagascar. Specimens of *Halcyon gularis* are in many European museums from the Philippine Islands, to which locality I believe the species to be confined. A bird is in Heine's Museum said to be from China, but I have little doubt that the skin was imported from the Philippines.

The description and figures are taken from a specimen in my own collection. Mr. Gould also possesses an example of the species obtained in the vicinity of Manilla, from which the beautiful figure in the "Birds of Asia" was drawn.

Kittlitz procured both the present species and *Halcyon chloris* in Luzon, and says that in their habits the two birds exhibited some forcible differences. The latter, he states, lives on crustacea and is a constant denizen of the sea-shore. The present species, however, is common wherever the shore is overgrown with trees, and is found right into the interior even in the wooded mountains. Its food consists of large insects, lizards, and small mammals, such as bats, &c.; perhaps sometimes of fish, as the bird is often seen near fresh water, where it takes the place of our European Kingfisher, although Kittlitz says that he himself never found any remains of fish in the stomachs of those he killed. It also affects woods and fields interspersed with high trees, where it lives solitary. Its flight and cry are somewhat similar to those of *Ceryle alcyon*, but it does not jerk its tail like the latter bird, which, Kittlitzs considers to be a true Kingfisher.

HALCYON CYANOVENTRIS.

HALCYON CYANOVENTRIS.

(MANY-COLOURED KINGFISHER.)

Alcedo cyanoventris	Vieill, Nouv. Dict. d'Hist. Nat. XIX, p. 412 (1818).
Halcyon cyanoventris	Cass. Cat. Halc. Phil. Mus. p. 6 (1852).
Entomobia cyaniventris	Cab. & Heine, Mus. Hein. II, p. 154 (1860).
Alcedo melanoptera	Horsf. Trans. Linn. Soc. XIII, p. 174 (1822).
Halcyon melanopterus	Steph. Gen. Zool. XIII, p. 100 (1826).
Entomothera melanoptera	Reich. Handb. *Alced.* p. 14, t. ccccix, fig. 3087 (1851).
Dacelo melanoptera	Schl. Mus. Pays Bas, *Alced.* p. 27 (1863).
"*Alcedo omnicolor*, Reinw." . . .	Temm. Pl. Col. 135 (1823).
Dacelo omnicolor	Less. Traitè d'Orn. p. 247 (1831).
Halcyon omnicolor	Swains. Classif. of Birds, II, p. 335 (1837).
Halcyon multicolor	Kaup, Fam. Eisv. p. 8 (1848).
Tengke-wrang of the Javanese (*Horsfield*).	

H. rostro toto lætè rubro: pileo nigro: dorso postico ultramarino: nuchâ gulâque rufis: abdomine cyaneo.

Hab. in insulâ "Java" dictâ.

Head and nape jet black, washed with ultramarine on the latter; back and scapularies beautiful rich cobalt, deepening in intensity on the rump and having a green lustre in certain lights; the whole of the wing-coverts jet black, except those bordering the carpal bend which are washed with blue; primary-coverts rich greenish cobalt: quills blackish, the inner web for the most part pure white, the outer web, especially of the secondaries washed with greenish cobalt; tail cobalt above, black beneath; chin whitish; cheeks black, tinged here and there with rufous; throat, upper part of the breast, and a collar round the neck, deep rufous, the former spotted here and there with ultramarine; entire under surface of the body very rich ultramarine; under wing coverts black; bill and feet dark red; eye dark brown. Total length 10 inches, of bill from front 2.4, from gape 2.7, wing 4.7, tail 3.0, tarsus 0.45, middle toe 0.8, hind toe 0.4.

Hab. Java (*Horsfield*, *Wallace*).

Additional references.—*Alcedo cyanoventris*, Bon. et Vieill. Enc. Meth. I, p. 396 (1823). *Halcyon cyaniventris*, Gray, Handl. of B. p. 91 (1869); *Halcyon melanoptera*, Gray, Gen. of Birds. I, p. 79 (1846); id. Cat. Fiss. Brit. Mus. p. 54 (1848); Horsf. and Moore, Cat. Birds Mus. E. I. Co. I, p. 127 (1854); *Dacelo melanoptera* Schl. Vog. Ned. Ind., *Alced.* pp. 22, 55, pl. 9 (1864): *Halcyon omnicolor*, Hartl. Verz. Mus. Brem. p. 13 (1844); Bonap. Consp. Gen. Av. I, p. 155 (1850), Gould; Birds of Asia, pt. xii (1863).

This beautiful Kingfisher comes from Java, to which island it seems to be entirely confined. It is by no means a common bird in collections, and little is known of its habits and general economy.

Mr. Wallace has with his usual kindness given me his experience of the present species during his residence in Java, as follows :—

"Iris dark brown ; bill and feet coral-red ; length of a fresh specimen $10\frac{3}{4}$ inches. I found this species in East Java frequenting the banks of streams shaded by forest. It often perched high up on the branches, but in other respects resembled our own Kingfisher in its habits."

I have already referred to the very interesting notes on Javanese birds by the Vicomte de Bocarmé, published by Professor Schlegel in his "Catalogue." The following observations of this nobleman are extracted thence:—

"In Java it is frequently observed on the dry hedges in the rice-fields, where it is continually pouncing on earth-worms, crabs, little fish, molluscs, &c. It likweise devours snails with their shells. It is also found in the stunted copses of thorns and bamboo. In the forenoon during the months of January and February, the male, perched on the top of a tree, utters his call-note, "taï-taï-taï-i-i-i"; to his affectionate greeting the female arouses herself, leaps high into the air, and replies with an answering cry, "cri-tri-tri-i-i." I took two eggs of this bird in May, in a hole dug in the earth which filled a cleft in the rock ; their form is round and their colour white. Its flight is sluggish, and it is accustomed often to settle on the ground."

I should be ungrateful were I to close this article without recording my sincere obligations to my kind friend Mr. W. J. Fraser of Soerabaya, who has taken a great deal of trouble to procure me specimens of Javanese Kingfishers. Of the present species he has sent me home several in spirits which I hope to turn to good account when the anatomy is considered. In one of his letters he informs me that unlike *Alcedo beryllina*, which is found on the sea-coast, *Halcyon cyanoventris* is only met with inland.

The description, measurements, and figure are from a beautiful skin purchased of Mr. G. Adolphe Frank, junior, who in his capacity as a Natural History Agent has been instrumental in procuring me many rare species of Kingfishers.

HALCYON PILEATA.

HALCYON PILEATA.

(BLACK-CAPPED KINGFISHER.)

Alcedo pileata . .	Bodd. Tabl. Pl. Enl. p. 41 (1783).
Halcyon „ . .	Gray and Mitch. Gen. of Birds, I. p. 79 (c. 1844).
Entomothera „ . .	Reich. Handb. *Alced.* p. 15, t. cccci, fig. 3080-81 (1851).
Entomobia „ . .	Cab. Mus. Hein. th. II, p. 155 (1860).
Dacelo „ . .	Schl. Mus. Pays Bas. *Alced.* p. 27 (1863).
„ *atricapella* . .	Less. Traité d'Orn. p. 246 (1831).
Alcedo „ . .	Gm. Syst. Nat. I, p. 453 (1788).
„ *brama.* .	Less. Cent. Zool. pl. viii. (1830).
„ *puella.* .	"Krelling," Reich. Journ. f. Orn. 1854, p. 149.
Martin-pecheur de la Chine.	Buff. Pl. Enl. 673;
Udang, Malay (Blyth);	
Burong-udang, Malays of Sumatra (Raffles).	

H. rostro toto rubro: caudâ longiori: pileo nigro: dorso ultramarino: nuchâ et gulâ albidis: abdomine flavescente-rufis.

Hab. in regione indicâ.

Head and cheeks, the upper portion of the back below the collar, shoulders, and wing-coverts, black; back, scapularies, upper surface of the tail and the outer web of the secundaries and primaries, except towards their end, rich ultramarine; the basal half of the inner web of the primaries white; the terminal half of the wing-feathers and the under surface of the tail, blackish; throat, upper part of breast, and a collar behind the neck, white, with tinge of tawny on the latter two; abdomen and under wing-coverts fine rust-colour, deeper on the flanks; bill coral-red; eye dark brown; feet red. Total length 11.5. Length of bill from front 2.2, from gape 2.6, wing 4.9, tail 3.3, tarsus .4, middle toe .8, hind toe .4.

Hab. Ceylon (*Layard*), India (*Jerdon*), Andaman Islands (*Beavan*), Burmah (*Beavan*), Siam (*Schomburgk*), Cochin (*Day*), China (*Swinhoe*), Tenasserim (*Briggs*), Malay Peninsula (*Cantor*), Sumatra (*Kreling*), Borneo (*Wallace*), Phillipines (*Mus. Lugd.*).

Additional references.—*Halcyon pileata*, Gray, Cat. Fiss. Brit. Mus. p. 54 (1848); Cass. Cat. Halc. Phil. Mus. p. 5 (1852); *Dacelo pileata*, Schl. Vog. Ned. Ind. *Alced.* pp. 22, 54, pl. 9 (1864); *Alcedo atricapilla*, Lath. Ind. Orn. I. p. 251 (1790), Shaw, Gen. Zool. viii. p. 70 (1811), Bon. and Vieill. Encl. Meth. I. p. 289 (1823); *Halcyon atricapilla*, Pelz. Voy. Nov. Nog. p. 49 (1865); *H. atricapillus*, Steph. Gen. Zool. xiii, p. 99 (1825), Blyth, Cat. Birds Mus. As. Soc. Beng. p. 47 (1849), Horsf. and Moore, Cat. Birds Mus. E. I. Co. I. p. 124 1854, Gould, Birds of Asia, pl. —(1860).

I have followed Professor Schlegel in referring Scopoli's name *albiventris*, which has been generally considered by Ornithologists to be a synonym of the present species, to the African Brown-hooded Kingfisher (*Halcyon fuscicapilla*). For, as Professor Schlegel remarks, Sonnerat described many African species, even the Secretary, as coming from the Phillipine Islands. It will, moreover, be seen by reference to Sonnerat's original description and figure,[a] and to the description by Scopoli,[b] that the bird represented by them has a brown head and back, a whitish mark before the eye, and each of the breast feathers marked with a central line of brown; characters which it will be seen by a glance at the figure in the plate opposite, are totally inapplicable to the present species. All these points, however, are characteristic of the African bird.

The geographical range of *H. pileata* is rather extended. Mr. Blyth (*l. c.*) gives its habitat as "Eastern side of the Bay of Bengal; rare on the western; Bengal Sundarbans; Malayan Peninsula and Archipelago; China." In the latter country, Mr. Swinhoe says,[c] it is a resident species from Canton to the Yangtze, but rare in the neighbourhood of Amoy.[d] The Chinese use the feathers for manufacturing fans, as do also the Siamese, according to Sir Robert Schomburgk.

The Black-winged Kingfisher was also met with at Hong-Kong by the Novara Expedition. Herr Von Pelzeln, to whom we are indebted for a scientific account of the results of this Expedition, has published (*l. c.*) the following note by Herr Zelebor:—"It was met with on the 10th of July at Shek-Pei-Wen in a small clump of trees, in which was a spring. The cry of this bird was like that of the European Great Spotted Woodpecker."

Captain Briggs forwarded some specimens of the present bird to Mr. Gould,[e] from Tavoy in the Tenasserim provinces, and Captain Beavan, in his paper on the "Birds of the Andaman Islands,"[f] gives a note of Colonel Tytler's to the effect that the bird is common there.

I have in my own collection three specimens from Malacca, and Mr. Moore, in his valuable essays on the collection formed by Dr. Cantor in the Malay Peninsula,[g] observes, "It would appear to be tolerably common at Pinang, where this species was collected."

The following are Mr. Jerdon's notes on the present bird, taken from his "Birds of India:"—

"This fine Kingfisher is found but very rarely in India and Ceylon. I once obtained a specimen, which I shot myself, at Tellicherry on the Malabar Coast: and I have seen others from the same locality. It is also rare in Bengal, but has been killed as high up the Ganges as Mongyr; it is more common, however, in the Sunderbuns, and on the Burmese Coast, as far as the Malay Peninsula and Islands, extending eastward to China. It appears to prefer wooded countries near the sea, or mouths of large rivers. It is said to feed both on fish and on insects, and has a harsh crowing call."

Mr. Layard observes,[h] "This lovely Kingfisher has but once fallen under my notice as an inhabitant of Ceylon. The specimen in question was shot in the Jaffna district in the island of Valenny. I know nothing personally of its habits."

Mr. Gould has given a beautiful illustration of the present species in his "Birds of Asia," concerning which Mr. Blyth, in his commentary on Jerdon's "Birds of India,"[i] remarks, "In Mr. Gould's figure in the Birds of Asia, the bill should be deeper and bright coral-red; and the head in the living bird looks considerably larger, while the body-feathers are more compressed."

I have now before me a specimen collected at Sarawak by Mr. Wallace, which has the bill a little shorter and stouter, and the under parts more richly coloured than my Malacca specimens, though in the measurements of the wings and tail they agree exactly.

a. Voy. Nov. Guin. p. 65. pl. 31. b. Del. Faun. et. Flor. Ins. 11. p. 90. c. P. Z. S. 1863, p. 269.
d. Ibis, 1860, p. 49. e. P. Z. S. 1859, p. 150. f. Ibis, 1867, p. 314.
g. P. Z. S. 1854, p. 268. h. Ann. Nat. Hist. 1853, p. 171. i. Ibis, 1866, p. 348.

HALCYON ERYTHROGASTRA.

HALCYON ERYTHROGASTRA.

(ST. JAGO KINGFISHER).

Alcedo senegalensis, var. g.	Gm. Syst. Nat. I, p. 456 (1788).
Alcedo senegalensis, var. a.	Lath. Ind. Orn. I, p. 249 (1790).
Alcedo senegalensis, var c.	Bon. et Vieill. Enc. Meth. I, p. 283 (1823).
Alcedo erythrogaster	Temm. Tabl. Meth. p. 75 (1807).
Halcyon erythrogaster	Gray, Gen. of B. I, p. 79 (1846).
Halcyon erythrogastra	Sharpe, Ibis, 1869, p. 282.
Halcyon erythroryncha	Gould, P.Z.S. 1837, p. 22, et Voy. Beagle, Birds, p. 21 (1841).
Halcyon jagœnsis	Darw. Voy. Beagle, I, p. 2 (1839).
„ „	Bolle, Journ. f. Orn. 1856, p. 23.
Halcyon rufiventris	Bolle, Journ. f. Orn. 1857, p. 319 (*nec. Sw.*).
„ „	Bocage, Jorn. Acad. Lisb. I, p. 134 (1866).
Dacelo rufiventris	Keul. Ned. Tijdschr. III, p. 366 (1866, *nec Sw.*).
Alcedo caucrophaga	Forst. Descr. Anim. p. 4 (1844, *nec Lath.*).

H. rostro toto rubro: pileo albescenti: major: coloribus purioribus.

Hab. in insulâ 'St. Jago' dictâ.

Adult. Entire head and neck albescent, purer on the sides and back of the neck; middle of the back and scapulars deep black, the basal part of the latter white; lower part of the back, rump, and upper tail-coverts brilliant ultramarine, with a slight fringe of cobalt here and there; tail ultramarine above, black beneath, the feathers edged with black on the upper surface; wing-coverts brown, mixed with black; quills dark brown, white at the base, the base of the outer web of the primaries and nearly the whole outer web of the secondaries bright ultramarine, tinged in some lights with lilac: throat and breast pure white; rest of the under surface of the body, with the under wing- and tail-coverts, deep sienna; bill and feet rich sealing-wax red. Total length, 9·0 inches; of bill from front, 1·8; from gape, 2·1; wing, 4·0; tail, 2·7; tarsus, 0·45; middle toe, 0·65; hind toe, 0·3.

Young. Similar to the adult, but has the belly dull red and a few markings on the breast; bill brownish-red, becoming brighter near the base; edge of carpal joint sandy red; no lilac on the wing; and the bases of the scapulars, which are white in the adult, are dusky-grey.

Hab. St. Jago, Cape de Verde Islands (*Darwin, Keulemans*).

This is, I believe, a good species, and distinct from the *Halcyon semicærulea* of Forskäl

from the continent of Africa. It is to be recognised by its larger size, whiter head, and generally purer and more brilliant coloration. The beak is also appreciably longer and stouter, and in the young stage the bird from St. Jago never has the black markings on the breast so thickly distributed as in the continental species.

Mr. Keulemans, who visited the Cape de Verde Islands with Dr. Dohrn in 1863 and 1864, procured a large series of this lovely bird, and he has very obligingly given me the following extracts from his notes on its habits:—

"This Kingfisher is a native of the Cape de Verde Islands, and is rare in the northern but common in the southern islands. There is no difference in size in the adult birds, but young ones are considerably smaller. In colour the male and female resemble each other, but the wing-coverts of the latter are less black, and the tip of the primaries brownish black. In the young birds the colour of the bill is brownish-red, yellow at the tip, the legs rufous, and the plumage generally less beautiful; they have also very little red on the under parts, the flanks alone being of this colour. When the young leave the nest they have no red at all, and the feathers of the head and breast are striped and banded with grey; the red under parts appear gradually, but not by moulting."

"*Halcyon erythrogastra* is the only Kingfisher inhabiting the Cape de Verde Islands, and it is very common in St. Jago. There it is very tame, and can be approached quite closely without difficulty. When flying up, it utters a note something like that of the Common Kestrel (*Tinnunculus alaudarius*), and this is termed 'laughing' by the inhabitants. Its food consists of large insects, lizards, mice, and young birds. It breeds in December and January, and builds its nest generally in holes under the roots of large trees. The native name is *Passerinha*."

"I shall never forget a scene I once witnessed in connexion with this bird. Dr. Dohrn and myself had paid a visit to Cidada Velha, the old capital of St. Jago, and had to pass a night in that quarter of the island. A recent drought had exhausted the country, and provisions and lodgings were almost impossible to obtain. We entered an old and dilapidated hut, and endeavoured to make ourselves comfortable for the night. Sleep was impossible, for it rained in torrents, and through one of the many openings in the roof the water fell on my face and body rendering me completely miserable, so that I determined to get up so soon as the first streak of daylight appeared. Day dawned at last, and I sallied forth. The rain had ceased and the morning was calm and fresh, so with my gun in my hand I entered the ruins of an old Portuguese church, by the side of a mountain torrent, a little way from the town, and took my seat on a stone, waiting for the sun to rise. Throughout the interior of the church the long grass grew to a height of three or four feet and was all wet with the dew and the rain of the night before, while on the damp walls dozens of lizards (*Gecko*) were crawling. Occupied with my thoughts I sat still for some time when my attention was aroused by a fluttering of wings, and looking up I caught sight of a Kingfisher in the act of tearing a lizard from the wall. Presently another entered, then another, and another, till at last the church was full of them, a continual stream of Kingfishers entering and departing through the open windows and the holes in the roof. The opportunity for collecting was too good to be lost and I secured many specimens, but neither the noise of my gun nor the fall of their companions deterred the remainder from entering the church and procuring their food. So unsuspicious of harm is this bird that I often threw a stone at one, and the only notice it took was to turn its head if the stone went near to it. As the sun rose I went outside, and there the whole place was full of Kingfishers also, busily engaged in hunting for lizards among the wet herbage and ruins. The sight made a great impression on my mind, as hitherto I had only known the species as a solitary bird sitting throughout the daytime by itself and rather sluggish in its habits than otherwise."

The plate is drawn from a sketch taken from life by Mr. Keulemans in St. Jago. The descriptions of the adult and young are also taken from birds procured by the same gentleman, the adult being in my own collection and the young in the Leiden Museum.

HALCYON SEMICÆRULEA.

HALCYON SEMICÆRULEA.

(AFRICAN WHITE-HEADED KINGFISHER.)

Martin-pêcheur bleu et noir de Senegal . . .	Buff. Pl. Enl. 356.
Crab-eating Kingfisher, var. c.	Lath. Syn. I, p. 619 (1783, *ex Buff.*).
Alcedo senegalensis, var. d.	Gm. Syst. Nat. I, p. 456 (1788, *ex Buff.*).
Alcedo senegalensis, var. j.	Lath. Ind. Orn. I, p. 249 (1790).
Alcedo senegalensis, var. b.	Bonn. et Vieill. Enc. Meth. I, p. 283 (1823).
Alcedo semicærulea	Forsk. Descr. Anim. p. 2 (1775).
Halcyon semicærulea	Rüpp. Syst. Uebers. p. 23 (1845).
Cancrophaga semicærulea	Bonap. Consp. Vol. Anis. p. 9 (1854).
Alcedo leucocephala	Müller, Syst. Nat. Suppl. p. 243 (1776).
Halcyon leucocephala	Gray, Handl. of B. I, p. 90 (1869).
Dacelo actæon	Less. Traitè d'Orn. p. 247 (1831).
Halcyon Swainsonii	Smith, S. Afr. Q. Journ. 1836, p. 143.
Halcyon rufiventer	Swains. B. of W. Afr. II, p. 101, pl. 12 (1857).
Cancrophaga rufiventris	Bonap. Consp. Vol. Anis. p. 9 (1854).

H. rostro toto rubro: pileo sordidè albescente: minor: coloribus absoletioribus.

Hab. in parte septentrionali et occidentali regionis Æthiopicæ.

Male. Head and neck greyish white, purer on the latter, the head showing the shafts of the feathers rather strongly; back and scapulars and wing-coverts glossy black; lower part of the back, rump and upper tail-coverts rich glistening cobalt; primary-coverts cobalt shaded with black; quills black, the inner web white for more than half its length, the outer web, especially of the secondaries, broadly edged with brilliant cobalt, extending nearly the entire length of the latter, but confined to the base of the former, where it has a faint lilac tinge: tail above brilliant cobalt, shading into black on the edge of the feathers, the underside

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Additional references.—*Alcedo semicærulea*, Gm. Syst. Nat. I, p. 467 (1788); Bonn. et Vieill. Enc. Meth. I, p. 297 (1823); Rüpp. N. Wirb. p. 28, t. 24, fig. 1 (1835). *Halcyon semicærulea*, Gray, Cat. Fiss. Brit. Mus. p. 53 (1848); Bonap. Consp. Gen. Av. I, p. 155 (1850); Cab. & Heine, Mus. Hein. th. II, p. 153 (1850); Reich. Handb. *Alced.* p. 11, t. ccccii, fig. 3083 (1851); Sclater, Contr. to Orn. 1853, p. 124; Horsf. & Moore, Cat. B. Mus. E. I. Co. I, p. 128 (1854); Heugl. Syst. Uebers. p. 18 (1856); Hartl. Orn. West Afr. p. 33 (1857); id. Journ. f. Orn. 1861, p. 104; Heugl. Ibis, 1859, p. 340; id. Peterm. Mitth. 1861, p. 21; Antin. Cat. Ucc. p. 28 (1864); Heugl. Journ. f. Orn. 1864, p. 331; Hartl. P. Z. S. 1865, p. 88; Mont. P. Z. S. 1865, p. 94; Hartm. Journ. f. Orn. 1866, p. 201; Bocage, Journ. Acad. Lisb. p. 134 (1867); Sharpe, Ibis, 1869, p. 282; Gray, Handl. of B. I., p. 90 1869; Blanf. Zool. Abyss. p. 322 (1870); Finsch & Hartl. Orn. Ost. Afr. p. 160 (1870). *Dacelo semicærulea*, Heugl. Orn. N. O. Afr. p. 190 (1869). *Alcedo leucocephala*, Cass. Proc. Acad. Phil. 1864, p. 243. *Halcyon Swainsoni*, Gray, Gen. of B. I. p. 79 (1846); Layard, B. of S. Afr. p. 63 (1867); *Halcyon rufiventer*, Bonap. Consp. Gen. Av. I, p. 155 (1860); Cass. Cat. Halc. Phil. Mus. p. 9 (1852); Hartl. Journ. f. Orn. 1854, p. 3. *Halcyon rufiventris*, Reich. Handb. *Alced.* p. 10, t. ccccii, fig. 3083-84 (1851); Cab. & Heine, Mus. Hein. th. II, p. 153 (1860); Heugl. Journ. f. Orn. 1864, p. 332.

deep black ; cheeks, throat, and breast white ; rest of the body with the under-wing and tail-coverts deep sienna ; bill and feet sealing-wax red. Total length 8·0 inches, of bill from front 1·6, from gape 1·95, wing 4·3, tail 1·4, tarsus 0·45, middle toe 0·7 hind toe 0·3.

Female. Similar to the male, but the colours duller and the head more dusky.

Young. Similar to the adults, but the colours much more dingy, those parts being blackish-brown which in the adult are jet-black ; head uniform ashy ; back of neck, cheeks and entire breast dirty white, thickly crossed with transverse brown vermiculations ; throat and abdomen white, flanks and under wing-and tail-coverts tinged with sienna ; the blue on the wings and back dull ; bill dark red, black at the base.

Hab. North-Eastern Africa as high as 16° North Lat. (*Heuglin*), Yemen, South Arabia (*Forskäl*), West Africa, Senegal (*Swainson*), Casamanze (*Verreaux*), Port Bæsja (*mus. Brit.*), Sierra Leone (*Verreaux*), Goree (*Verreaux*), River Volta (*Ussher*), Lagos (*mus. J. Gould*), Gaboon (*mus. Brem.*), Angola (*mus. Lisb.*), Benguela (*Monteiro*), Ondonga, Ovampo Land (*Andersson*).

Compared with *Halcyon erythrogastra* from the Cape Verde Islands, the present species is generally smaller, has the head not nearly so pure white, the general tone of the plumage is more dusky, and the white on the wing when extended is more conspicuous than in the insular species. In the young birds there is a decided difference, for in addition to the smaller size, the young *Halcyon semicærulea* has the hinder neck and breast much more thickly barred than in *Halcyon erythrogastra*. I noticed this difference particularly in the Leiden Museum, which contains specimens of the young of both species.

I subjoin a few measurements in order to show the larger size of the bird from St. Jago. It will be noticed that the latter has the shorter wing, though it is the largest bird:—

No.	Name.	Sex.	Locality.	Long tot.	Al.	Caud.
1	*H. semicærulea*	♂	N. E. Africa, *mus. R. B. S.*	8·0	4·3	2·5
2	,,	♀	,, ,,	8.0	4·3	2·5
3	,,		Abyssinia ,,	8·0	4·2	2·4
4	*H. erythrogastra*	♂	St. Jago, *Keulemans*	9·0	4·1	2·7

Little has been recorded respecting the habits of *H. semicærulea*. Mr. Blanford (*l.c.*) writes as follows respecting it, as observed by him during the recent expedition to Abyssinia:—"Iris brown, bill and legs scarlet. A purely insectivorous bird, rarely seen near water, and occasionally found in dry portions of the jungle. It occured about Ailet and Ain at the base of the hills, and was also seen in the Anseba Valley."

The notes of Mr. Jesse, the Zoologist attached to the above Expedition, are the following :—" First procured by Mr. W. T. Blanford at Ailet, and afterwards by both of us from Ain to the Anseba river during July and August. Saw old birds carrying food in their beaks, but could not discover the nest. Note, a noisy chatter in a rapid diminuendo. Insectivorous. I did not meet with this species anywhere else during my stay in Abyssinia."

Dr. von Heuglin has given (*l.c.*) the following particulars:—

" The Red-bellied Kingfisher is distributed over the whole of the warmer portions of North Eastern Africa, and extends northward up to 16° N. Lat. We found him by the sea (Adail and Somali Coasts) in October, in Abyssinia at an altitude of 8,000 feet above the sea from the commencement of the rainy season to October, northward up to the Bogos and Takah countries, on the Blue and White Nile, westward to the Djur district. Here it was in April, and in June at Djebel-Arandj. According to Forskal it is found in South

Arabia. It is generally met with in pairs both by water and in the wooded country; is, however, more of a fish-eater than fond of Orthoptera, Coleoptera, &c., which latter, however, it does not disdain. The breeding-time in Abyssinia must be in May and June; the males then follow each other with much noise and pugnacity. The call may be rendered *djï-djï-djï-dschi*."

The following observations have been kindly given to me by my friend M. Jules Verreaux:—

"Contrary to most Ornithologists, I am unable to separate the two birds known by the names of *Halcyon semicærulea* and *Halcyon erythrogastra* of St. Jago, where I have killed many specimens. The birds from the last named locality appear indeed of a more vivid colour, especially as regards the fore part of the body, which is beautifully white compared with specimens from Senegal and generally from the West Coast of Africa; I have seen, however, in the numerous collections from these countries, individuals having the same colouration as the former bird, whilst those from Abyssinia, which are also generally a little purer in tint than those of West Africa, seem to be intermediate in size between the last-named birds.

"As regards its habits they are exactly the same in every locality, and, as the Abyssinian travellers have well remarked, these birds ordinarily frequent only brushwood, sometimes the large forests, especially in the breeding season, for it is in the cavities of the large trees that the female retires to lay her four or five glossy pure white eggs which are like those of the other species, but perhaps of a little purer colour than its congeners. At this time the male appears exclusively charged with the care of the female at first, and afterwards of the young birds till they are old enough to shift for themselves. In St. Jago I saw a large number in the cotton-fields which swarm with insects, and these appear to be their principal food. I am not at this day aware if at the season when insects become scarce, the birds, like some of their congeners, frequent the water to feed on the little fish, or to capture the small crustaceans. I am, however, disposed to think that they do this from the fact that I killed several specimens at Goree, where I found them in small flocks of eight or ten individuals, not far from the sea shore, but I could not follow them up on account of the shortness of my stay. As with most species of the genus, their nature is quick and restless, their cry is deep and sonorous, especially in the early morning and late at night, when they collect to seek their roosting place in the woods, for as far as I could see they always took refuge in the densest shades to pass the night. During the breeding season, which we observed once during our travels at Sierra Leone in November, each pair was solitary, and did not mingle with the others. It was at this time that we discovered many nests, and we could see that the male was actively employed in chasing the insects to take them to the female as she was sitting on her nest. It is also at this period of the year that the bird is beautiful to see, for when he is alarmed he erects all the feathers of the head, forming a kind of graceful crown. During the breeding season also the birds are silent, and it is exceedingly rare to hear any other cry but the short note of the male as he approaches the nest. I may add that it was by error that my friend Sir Andrew Smith included this species among the birds of South Africa. When we were at the Cape together I gave him a specimen from Senegal out of my collection, and it must have been by an oversight that it was included by him in the list of South African birds."

I was particularly pleased at hearing from so good an authority as M. Jules Verreaux that *Halcyon semicærulea* was not a South African bird. I have long had doubts on this subject, for I have never seen a specimen among the numerous collections I have examined from South Africa, and the southermost range of the present species is therefore, so far as we know, Ovampo Land, where it was procured by Andersson.

The specimen from which the description and figure of the adult bird has been taken is from Abyssinia, in my own collection, that of the young bird being the Ondonga specimen above mentioned, also in my own cabinet.

HALCYON ALBIVENTRIS.

HALCYON ALBIVENTRIS.

(BROWN-HOODED KINGFISHER).

Martin-pêcheur de l'isle de Luçon, .	Sonn. Voy. N. Guin. pl. 31 (1776).
Alcedo albiventris, ...	Scop. Del. Faun. et Flor. Insubr. II, p. 90 (1786, *ex Sonn.*).
Dacelo albiventris, . . .	Schl. Mus. Pays Bas, *Alced.* p. 31 (1863).
Halcyon albiventris, ...	Finsch, Journ. f. Orn. 1867, p. 238.
Dacelo striata, ...	Drap. Dict. Class d'Hist. Nat. X, p. 223 (1826).
Dacelo fuscicapilla, ...	Lafr. Rev. et Mag. de Zool. 1833, pl. 18.
Halcyon fuscicapilla, ...	Gray, Gen. of Birds, I, p. 79 (1846).
Chelicutia fuscicapilla, . . .	Reich. Handb. *Alced.* p. 39, t. ccccxxiv, fig. 3152-53 (1851),
Pagurothera fuscicapilla, . . ,	Cab. and Heine, Mus. Hein. th. II, p. 150 (1860).
Dacelo vaillanti, ...	Temm. MS. in Mus. Lugd.
Halcyon vaillanti, ...	Mull. Journ. f. Orn. 1855, p. 7.
Alcedo atricapilla, Var. . . .	Lath. Ind. Orn. I, p. 252 (1790).

H. rostro breviori fusco-rubro, versus apicem nigro: pileo distinctè striato: major: scapularibus nigris: pectore brunneo striato.

Hab. in Africâ meridionali.

Adult. Head dark brown, broadly striped with darker brown, becoming nearly black; scapularies and wing-coverts black; lower part of the back and rump bright cobalt; quills brownish-black, the inner web pale orange at the base, the primaries at the base of, and the secondaries for the whole of the outer web, as well as the primary-coverts, bright cobalt; tail cobalt above, black beneath, the inner web of all but the two middle feathers more or less black at the edge; feathers from the base of the nostril extending backwards over the eye, cheeks and a collar round the neck pale yellowish-brown with distinct longitudinal bars; throat and abdomen white with faint lines marking the shaft of the feather; breast and flanks tinged with yellowish brown and marked with very broad and distinct longitudinal stripes; under wing- and tail-coverts pale orange, paler on the latter; bill crimson, black towards the tip; eye dark brown; feet dark red. Total length 10 inches, of bill from front 1.85, from gape 2.3, wing 4.2, tail 2.7, tarsus 0.5, middle toe 0.6, hind toe 0.3.

Additional references.—*Halcyon albiventris,* Sharpe, Ibis, 1869, pp. 277 282; Ayres, Ibis, 1869, p. 290: *Halcyon fuscicapilla,* Gray, Cat. Fiss. Brit. Mus. p. 54 (1848), Bonap. Consp. Gen. Av. I, p. 154, (1850); Cass. Cat. Halc. Phil. Mus. p. 8 (1852); Gurney, Ibis, 1859, p. 243, et 1860, p. 204; Layard, Birds of S. Afr. p. 63 (1867); Gray, Handl. of B. p. 91 (1869); *Chelicutia fuscicapilla,* Bonap. Consp. Vol. Anis. p. 9 (1854).

Young. Brown above, the brown markings on the head very indistinct; back pale cobalt; collar round the neck indistinct, dull fulvous brown; under-surface of the body very deep reddish-brown, the abdomen coloured like the rest of the breast, the throat alone being white; the shafts of the feathers on the upper part of the breast narrow and indistinct; bill dull red.

Hab. Cape Colony (*Layard*), Kaffraria (*mus. Hein.*), Natal (*Ayres*), Transvaal Republic (*Ayres*).

I cannot account with certainty for the differences of plumage exhibited by the present bird, as I cannot obtain satisfactorily identified specimens. It appears to me, however, that it is only the very old birds which obtain the black scapularies and the white belly. The young bird is coloured exactly like that of the young *H. orientalis*, and agrees with the figure of the young female in the plate of that species. More information on this point is required, and I draw the attention of Mr. Layard to the question.

The Brown-hooded Kingfisher is confined to South Africa, extending along the eastern coast as far as the River Limpopo. North of this point it seems to be replaced in Eastern Africa by the allied species *H. orientalis*. I can find no specific difference in specimens from various localities, and the variation in size appears from the following table of measurements, to be very trifling:—

No.	Locality.	Authority.	Long tot.	Rostr.	Al.
1	South Africa.	mus. R. B. S.	9·0	1·6	4·2
2	" "	" "	9·0	1·75	4·2
3	" "	" "	9·5	1·75	4·2
4	" "	" "	9·5	1.75	4·2
5	" "	" "	10·0	1·8	4·2
6	" "	" "	9·5	1·75	4·2
7	" "	" "	8·5	1·85	4·2
8	Natal.	" "	9·0	1·85	4·2

It must be borne in mind that the length of the birds above-mentioned is given from a dried skin in each case, so that little attention can be paid to the differences noted in the total length of the various specimens. The bill varies with age, so that, taking the absolute uniformity of the wing as our best guide, we may safely conclude that there is no specific difference to be found in specimens from different parts of South Africa. I am inclined to think that the Natal bird may be found to be a trifle larger than that of the Cape, as spec. 8, is a young bird and yet equals in size of bill spec. 7, which is the oldest bird in my collection.

Mr. Layard (*l.c.*) tells us that the present species "extends from Kaffraria to Natal and inland as far as Kuruman. Mr. Atmore assures me that it is plentiful at Swellendam, and that when he is digging in his garden specimens may always be seen perched on the trees near him, from which they dart down on the worms, slugs, &c., which he turns up with his spade.—It is not found in the neighbourhood of Cape Town; but I have received a pair from a Mr. Dixon, said to have been killed on the eastern frontier."

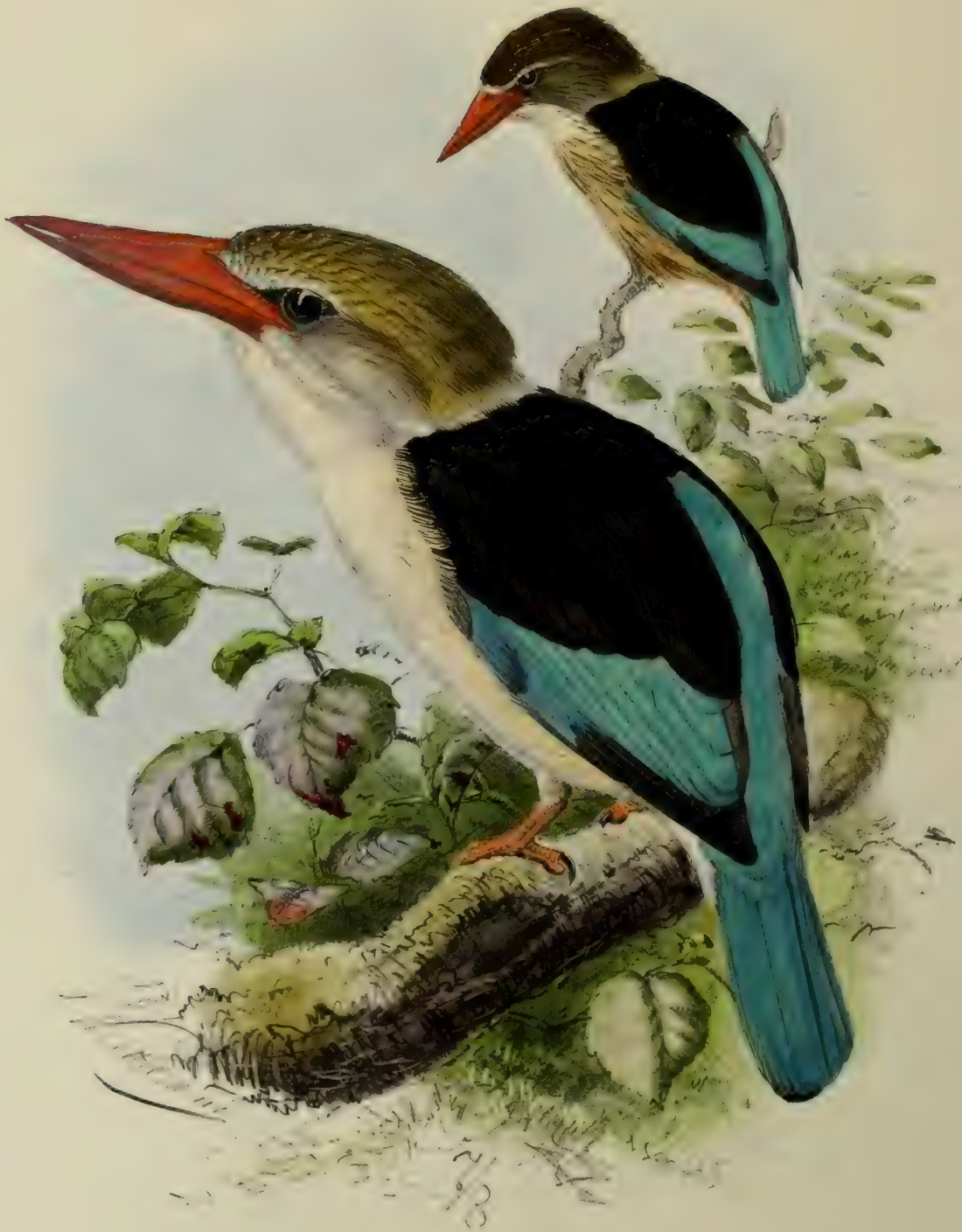
Mr. Ayres has given us a very interesting note on its habits (*l.c.*).

"*Male.* Eye dark brown; bill crimson, black towards the tip; legs dark red. In its crop beetles and grasshoppers. These birds frequent the bush, generally perching on some dead or bare bough not far from the ground; they do not take their prey on the wing, but

take it from the ground. They have a loud chattering note, somewhat similar to the "Laughing Jackass" (*Dacelo gigas*) of South Australia, but do not laugh in the same ludicrous manner; they have a dipping flight, seldom flying far at once."

Heine's Museum contains specimens of the Brown-hooded Kingfisher from Kaffraria. Besides the testimony above-given of Mr. Ayres, Dr. Finsch has recorded it (*l.c.*) from Natal, and I have a specimen in my own collection from the same locality. The furthest northern limit at which the species seems to have been met with, is the River Limpopo, where it was found by Mr. Ayres, but was scarce in this district.

The description, measurements and figure are taken from an adult specimen given me by my friend Mr. Layard from the Cape Colony. The young bird described was purchased by me of Mr. Frank of Amsterdam.



HALCYON ORIENTALIS. ad.& juv

HALCYON ORIENTALIS.

(EASTERN KINGFISHER.)

Halcyon orientalis, ... Peters, Journ. f. Orn. 1868, p. 134.
„ „ . . . . Hartl. and Finsch, Orn. Ostafr. p. 162 (1869).

H. rostro breviori, fusco-rubro, versus apicem nigro: pileo distinctè striato: major: scapularibus nigris: pectore unicolori.

Hab. in Africâ orientali.

Adult Male. Head light brown, striped with dark brown along the shaft of each feather; upper part of the back, scapularies and wing-coverts deep black ; lower part of the back and upper tail-coverts bright blue; quills light brown, the inner web pale orange at the base, the outer web edged with bright blue, more especially on the secondaries ; tail greenish-blue above, blackish beneath; a loral spot produced backwards over the eye, sides of and a collar round the neck, and the entire under-surface white, inclining to fulvous on the flanks, and purest on the throat and upper part of the breast ; bill dusky-vermilion ; feet orange. Total length 8.5 inches, of bill from front 1.65, from gape 2.2, wing 4.0, tail 2.4, tarsus 0.5, middle toe 0.7, hind toe 0.35.

Young Female. Head brown with indistinct stripes of darker brown down the centre of each feather ; a loral spot extending backwards over the eye, sides of the neck and a collar encircling the back of the neck, dirty white; middle of the back, scapularies and wing-coverts deep umber brown; lower part of the back and upper tail-coverts dull greenish-blue ; quills light-brown, the base of the inner web pale orange, the outer web edged with greenish-blue, especially on the secondaries ; tail greenish-blue above, brownish-black beneath ; throat white ; breast fulvous with a few faint stripes on the upper part ; bill dull vermilion ; feet orange; eye black. Total length 8.5, of bill from front 1.6, from gape 2.1, wing 3.9, tail 2.2, tarsus 0. 45, middle toe 0.65, hind toe 0.25.

Hab. Zambesi (*mus. Walden*), Mozambique (*Peters*), Mombas (*van der Decken*).

The description and measurements given above are from two of the typical specimens,

for the loan of which I am indebted to the kindness of Professor Peters of Berlin, the original describer. The figures in the accompanying plate are also drawn from these type-specimens, and, on comparing them with the figure of *Halcyon albiventris*, it will at once be seen that *Halcyon orientalis* is quite distinct.

I have also before me a specimen from the Zambesi, kindly lent me by Lord Walden, which seems to be an older bird than any of the specimens at Berlin. The colours in the Zambesi bird are brighter, the black on the back and scapularies is of a deeper tint, and the cheeks and sides of the neck are tinged with tawny red.

I must here express my sincere thanks to Professor Peters for his kindness in permitting the type-specimens of this rare and interesting species to be sent to London for the embellishment of my work.

HALCYON CHELICUTENSIS.

HALCYON CHELICUTENSIS.

(STRIPED KINGFISHER.)

Libyan Kingfisher	Lath. Gen. Hist. IV, p. 32.
Alcedo chelicuti	Stanley, Salt's Trav. in Abyss. App. p. lvi (1814).
Halcyon chelicuti	Hartl. Verz. Brem. Samml. p. 13 (1844).
Pagurothera chelicuti	Cab. & Heine, Mus. Hein. th. II, p. 152 (1860).
Dacelo chelicuti	Schl. Mus. Pays Bas, *Alced.* p. 32 (1863).
Halcyon chelicutensis	Finsch & Hartl. Orn. Ost. Afr. p. 163 (1870).
Dacelo tschelicutensis	Heugl. Orn. N. O. Afr. p. 192 (1869).
Alcedo variegata	Bonn. et Vieill. Enc. Meth. I, p. 397 (1823).
Pagurothera variegata	Cab. & Heine, Mus. Hein. II, p. 157 (1860).
Halcyon variegata	Hartl. P. Z. S. 1863, p. 105.
Alcedo striolata	Licht. Verz. Doubl. p. 12 (1823).
Halcyon striolata	Gray, Cat. Fiss. Brit. Mus. p. 54 (1848).
Chelicutia striolata	Reich. Handb. *Alced.* I, p. 39, t. ccccxxiv, fig. 3155 (1851).
Dacelo striolata	Schl. Mus. Pays Bas, *Alced.* p. 32 (1663).
Dacelo pygmæa	Cretzschm. in Rüpp. Zool. Atl. p. 42 (1826).
Halcyon pygmæa	Bonap. Consp. Gen. Av. I, p. 154 (1850).
Chelicutia pygmæa	Reich. Handb. *Alced.* p. 38, t. ccccxxiv, fig. 3154 (1851).
Halcyon damarensis	Strickl. Contr. Orn. 1852, p. 153.

Sumbo of the natives of Capangombe *(Anchieta)*.

Hab. in totâ regione Æthiopicâ.

Head brown, each feather longitudinally marked down the centre with a shaft-stripe of darker brown; ear-coverts and back of the neck black; feathers in front of the eye at the base of the bill, cheeks and a collar round the back of the neck dirty white, marked with brown and slightly tinged with buff; upper portion of the back, scapulars and wing-coverts brown, the greater coverts narrowly edged with white, primary coverts dull

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Additional references.—*Alcedo chelicuti*, Rüpp. N. Wirb. p. 68 (1835). *Halcyon chelicuti*, Rüpp. Syst. Uebers. p. 23 (1845); Ferr. et Gal. Voy. en Abyss. III, p. 248 (1847); Gray, Gen. of B. I, p. 79 (1846), et Cat. Fiss. Brit. Mus. p. 54 (1848); Cass. Cat. Halc. Phil. Mus. p. 9 (1852); Scl. Contr. to Orn. 1852, p. 124; Horsf. & Moore, Cat. B. Mus. E. I. Co. I, p. 128 (1854); Müll. Journ. f. Orn. 1855, p. 7; Heugl. Syst. Uebers. p. 18 (1856), et Ibis, 1859, p. 329. *Halcyon chelicutensis*, Sharpe, Ibis, 1869, p. 283; id. P. Z. S. 1869, p. 569. *Halcyon striolata*, Bonap. Consp. Gen. Av. I, p. 154 (1850); Hartl. J. f. O. 1854, p. 1, et Orn. Westafr. p. 31 (1857), et J. f. O. 1861, p. 104; Heugl. Peterm. Mitth. 1862, p. 21; Kirk, Ibis, 1864, p. 325; Layard, B. of S. Afr. p. 61 (1867); Bocage, Jorn. Acad. Lisb. 1867, p. 134; 1868, p. 40, 331; 1870, p. 339. *Chelicutia striolata*, Bonap. Consp. Vol. Anis. p. 9 (1854). *Halcyon pygmæa*, Heugl. J. f. O. 1864, p. 332; Hartm. J. f. O. 1866, p. 200; Ant. Cat. Ucc. p. 28 (1865).

green; quills dark brown, the inner web broadly white at the base, the outer web washed with dull green and narrowly edged with white towards the tip; lower portion of the back, rump and upper tail-coverts bright cobalt ; tail dull green above, greyish brown beneath ; under surface of the body white, inclining to buff on the flanks and abdomen; upper part of the breast and sides of the neck transversely crossed with narrow margins of brown, and each feather marked down the centre with a dark shaft-stripe; flanks longitudinally streaked with dark brown; bill and feet dull coral-red.

Young. Similar to the adult, but has the breast distinctly marked with transverse edgings to the feathers.

Hab. Senegal (*mus. Brem.*), Bissao (*Verreaux*), Sierra Leone (*Jardine*), Fantee (*Sharpe*), Abomey (*Fraser*), Angola; Ambriz and River Quanza (*Monteiro*), Galungo (*Sala*), Capangombe, Quillengues, Pungo-Andongo, Ambaca, Rio Chimba (*Anchieta*), Damara Land, Elephant Vley and Hykomkap (*Andersson*), Kurrichaine (*Verreaux*), Natal (*Verreaux*), River Limpopo (*Ayres*), Zambesi (*Kirk*), Zanzibar (*Kirk*), Suateli Coast (*Van der Decken*), Interior of Eastern Africa (*Speke*), Abyssinia (*Stanley, Rüppell*), Bogos Country, Senaar, Kordofan, Taka, White Nile (*Heuglin*), Djur, Gazelle River (*Antinori*).

I have adopted the amendment in the name of the present species as proposed by Drs. Finsch and Hartlaub, as in its original form the appellation was ungrammatical; and as the authors do not wish to refuse Lord Stanley the merit of the first introduction of the species, I see no reason why their name should not be generally allowed by Ornithologists.

Between the young and old birds of the Striped Kingfisher considerable differences are exhibited, some specimens having a great deal of white on the wing-coverts, while the cross-barrings on the breast are very conspicuous in the young bird. Some specimens have the breast more suffused with buff than others.

All the examples of the present species from South Africa are much larger than those from West Africa and Abyssinia. Strickland separated them under the name of *Halcyon damarensis* on receipt of some specimens from Damara Land collected by Andersson (*l.c.*). It is, however, impossible to separate them specifically, as, taking the Abyssinian bird as the type of the species, a regular series of gradations is reached according as specimens from the different parts of Western Africa are examined, those from Angola being intermediate in size and nearly attaining the large form of *H. damarensis*. I therefore regard these different races in a sub-specific light only, as in the case of the species of *Corythornis*.

Dr. von Heuglin, whose interesting notes on the Birds of North Eastern Africa we have often had occasion to refer to in the course of the present work, gives the following observation respecting the habits of the present bird:—

"We found this little Kingfisher resident, generally in pairs, along the Abyssinian coast-region, all through Abyssinia excepting on the very high mountain regions, in Takah, Galobat and Senaar. It inhabits without exception the steppes and wood-region, and numerous as it is in many localities I never found it near water. It seems to prefer open places in dry hilly countries, and is often observed in the neighbourhood of villages and enclosures, and even on huts. Its food consists entirely of coleoptera, orthoptera, lepidoptera and flies. Like the Flycatchers, this Kingfisher has places of favourite resort in its hunting-ground, dry branches of low bushes or hedges and such like places, where it is always to be found and from whence it captures insects on the wing. From this point it seldom goes on to the ground, and never hops on the latter. The breeding-season appears to be in the months of August and September. One can then often hear the flute-like whistle of the male, which sounds like a deep-drawn *dschüi-dschüi-dschüi* and is generally preceded by a churring note. In other respects this bird is quiet, solitary but not shy, and quits his hiding-place with reluctance. According to Rüppell it nests in

hollow trees; it generally sits straight upright, the neck drawn closely in, and the plumage puffed out. In this position it remains, with the bill lowered, moving it slowly backwards and forwards, for hours, until an insect approaches, which it seldom fails to secure; then, in spite of its previous hunched-up appearance, it is wonderfully quick and active in its movements."

For the following interesting details I am indebted to my friend M. Jules Verreaux:—

"*H. striolata* is everywhere common near Kurrichaine, the Latakoo and Val River, and is also met with commonly at Natal. Like *H. fuscicapilla* this little species is found in small bands of eight or ten, excepting during the breeding-season; and frequents by choice thin woods where the mimosas offer abundant food in the insects which abound on their blossoms, and they also feed on the saccharine matter secreted in the bark of these trees, which is a sort of gum resembling gum-arabic."

"Their habits are lively and active: they pursue each other with an activity which only flags during the great heat of the day, for then they hide in the shade, sitting motionless for hours with the head drawn into the shoulders like a ball; but after three or four o'clock in the afternoon their call-note may be heard, and their gambols are recommenced and carried on to nightfall. When deprived of insects or larvæ, these small birds descend from their perches to hunt after scolopandræ, cockroaches, and even small reptiles; but they leave all these when they are near water, and take the numerous species of insects which fly along the surface of the water: and when capturing either these or tadpoles, little fish or the small, flat, round crustacea which abound here, they plunge like true Kingfishers, and often remain some time below the surface to make sure of their prey. During the breeding-season one only sees them in pairs, and the female deposits her five or six eggs in the hole of a tree. These are round, white, with a yellowish tinge, and have a resemblance to the eggs of some of the *Picidæ*. The male at this season appears to occupy himself solely in hunting after food and bringing it to the female, and does the same for his progeny. It is now that one can observe the activity of this bird, who, to satisfy the voracity of the young, is often obliged to hunt far and wide. It is, but for its small size, difficult to distinguish it from *H. fuscicapilla*, as it has all the actions of this species also. It is, however, rare to find this latter bird in the same locality, except near Natal, where the two ranges coalesce. As does the larger bird, so *H. striolata* when scared raises the feathers of the head in the form of a beautiful crown. The young in their first plumage do not appear to differ from their parents excepting that their beaks are much longer, whereas the adult has the beak very short. They soon, however, shorten the beak from knocking it against branches or rocks. Specimens from Abyssinia seem to be intermediate in size between those of West Africa and South Africa, the western birds being generally paler coloured. Doubtless the difference of climate has much influence on this diminution in size, as also has the food; and this cause I have often observed during my extended travels as acting on birds."

Dr. Kirk says that in the Zambesi Region "this species is widely distributed, and equally common on the sea-coast among the mangroves and near the rivers far in the interior; also in the plains. Its food consists of insects, which it seems to catch on the wing. It is a sweet songster, both before and during the rains."

Mr. Monteiro (*l.c.*) gives the following note:—

"All the birds belonging to this family that I have observed in Angola utter a very agreeable loud note or song, which produces a singular effect when, in going down a river in a canoe in the breathless mid-day sun, it is heard cool and clear, while all else is hushed and still in the glare and heat. They are found in the thick woods and bush in the vicinity of the rivers as much or more than on the very banks."

The description is taken from an Abyssinian specimen in my collection. The right-hand figure in the plate represents a bird collected at Elephant Vley, Damara Land, on the 8th of September, 1859, by the late Mr. Andersson; while the hinder figure is drawn from the Abyssinian specimen above mentioned.

HALCYON SENEGALOIDES.

HALCYON SENEGALOIDES.

(MANGROVE KINGFISHER).

Halcyon senegaloides . Smith, S. Afr. Quart. Journ. II, p. 144 (1834).
Cancrophaga senegaloides, Bonap. Consp. Vol. Anis. p. 9 (1854)
Halcyon irrorata, . . Reich. Handb. *Alced.* p. 11, t.cccc, fig. 3078, t.ccccl, fig. 3079 (1851).

H. rostro toto rubro : pileo cinereo thalassino lavato : dorso thalassino : pectore cinereo : abdomine medio albo.

Hab. in Africâ australi orientali.

Head and nape cinereous, with a greenish-blue lustre; back and scapularies thalassine-blue, very bright on the lower part of the back; wing-coverts deep black; wing-feathers blackish, white at the base, the basal half of the outer web of the primaries, and nearly the whole of the outer web of the secundaries brilliant thalassine-blue; tail above blue, beneath black; a stripe from the base of the beak extending backwards over the eye, dusky cinereous; spot in front of the eye and ring of feathers round the eye black; throat, abdomen, under wing and tail-coverts white, the latter washed with blue; cheeks, sides of the neck, breast and flanks cinereous with a greenish lustre, and with transverse cinereous vermiculations; bill coral-red; feet dark reddish yellow; eye dark brown. Total length 9 inches, of bill from front 2, from gape 2.4, wing 4.2, tail 2.6, tarsus 0.45, middle toe 0.8, hind toe 0.4.

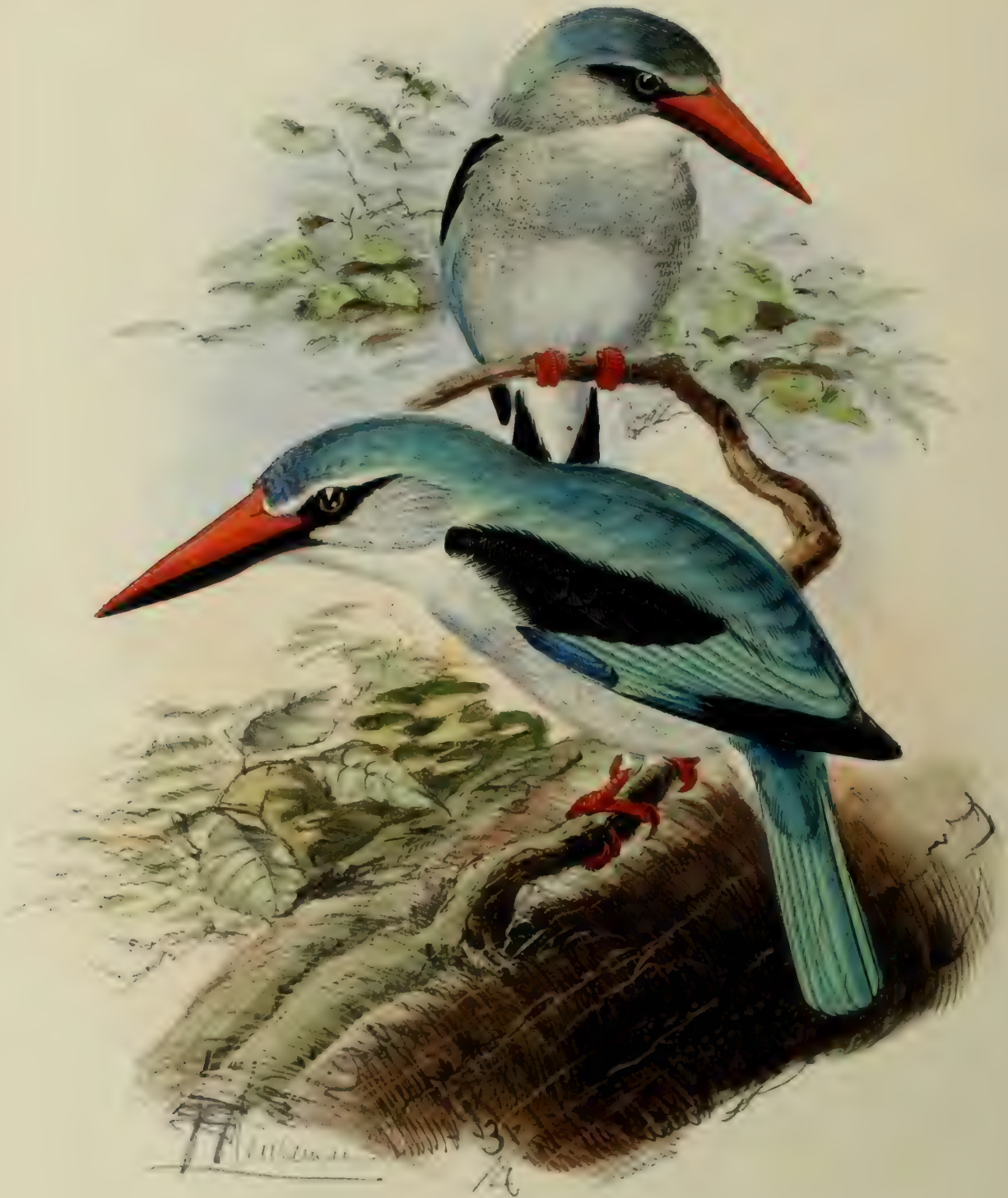
Hab. Natal (*Smith*, *Ayres*), Southern Mozambique (*Peters*).

The present species is rare in European Museums, and has as yet only been met with in Natal and South Mozambique. Sir Andrew Smith, the original describer, states that "like other members of the group, *Halcyon senegaloides* resorts to thickets and feeds upon insects, especially crustacea and *gryllæ*."

Additional references.—*Halcyon senegaloides*, Smith, Ill. Zool. S. Afr. pl. 63 (1849), Bonap. Consp. Gen. Av. I, p. 158 (1850), Cass. Cat. Halc. Phil. Mus. p. 8 (1850), Müller, Journ. f. Orn. 1855, p. 7, Gurney, Ibis, 1865, p. 265, Layard, Birds of S. Afr. p. 63 (1867). *Halcyon irrorata*, Cab. Van der Decken's Reise, III, p. 36 (1868), Hartl. & Finsch, Orn. Ost. Afr. p. 159 (1869).

Mr. Ayres, to whom we are indebted for several very interesting field-notes published at various times in Mr Gurney's papers in the "Ibis," gives us the following description of the habits of the present Kingfisher. "These birds as far as I know, are only found upon the mangroves which line the bay; they feed principally upon small crabs, though fish are sometimes taken by them. They are generally seen singly or in pairs, and are only here during the winter months, leaving us on the approach of summer; they are rather shy birds, and dive into the dense mangrove-bush when alarmed."

The description and measurements given above are taken from a very beautiful skin sent by Mr. Ayres from Natal, and now in the collection of the Rev. H. B. Tristram, who has kindly lent it to me. The plate is drawn from the same specimen. Very little difference is to be seen between the sexes, though according to Mr. Ayres, the female has the bill dusky towards the tip, and the plumage less brilliant.



HALCYON CYANOLEUCA, ad & juv

HALCYON CYANOLEUCA.

(ANGOLA KINGFISHER.)

Alcedo cyanoleuca, ...	Vieill. Nouv. Dict. d'Hist. Nat. XIX. p. 401 (1818).
Halcyon cyanoleuca, ...	Hartl. Contr. to Orn. 1849, p. 20.
Cancrophaga cyanoleuca, ...	Bonap. Consp. Vol. Anis. p. 9 (1854).
Martin-pecheur à ventre sablè, . . .	Temm. Cat. syst. p. 215 (1807).

H. maxillâ rubrâ, mandibulâ nigrâ: scapularibus lætè thalassino lavatis: major: pileo lætè thalassino striâ nigrâ per oculum suprà regionem paroticam productâ.

Hab in Africâ occidentali et australi.

Above beautiful thalassine-blue, showing a sea-green tint in some lights, especially bright on the rump and outer edge of the secondaries; a white stripe from the base of the nostrils extending backwards over the eye, white; feathers at the base of the bill, encircling the eye and extending backwards over the ear-coverts deep black; wing-coverts jet-black, outer wing-coverts thalassine-blue; quills black, the inner web white at the base; tail thalassine-blue above, beneath black; throat and under wing-coverts pure white; rest of the under-surface of the body greyish white, with small transverse cinereous verniculations, and washed in some lights with a thalassine lustre; upper mandible vermilion, lower mandible black; feet black. Total length 9 inches, of bill from front 1.8, from gape 2.3, wing 4.4, tail 2.5, tarsus 0.4, middle toe 0.7, hind toe 0.35.

Hab. Gambia River (*mus. R. B. Sharpe*), Angola (*Temminck*), Benguela (*Monteiro*), Ondonga, Ovampo Country (*Andersson*), Cape Colony (*Layard*), Monocusi River, N. Natal (*Ayres*), Zambesi River (*mus. Walden et R. B. Sharpe*).

I believe this species to be fully separable from *H. senegalensis*, the points of distinc-

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Additional references.—*Alcedo cyanoleuca*, Bon. et Vieill. Encl. Meth. I, p. 394 (1823). *Halcyon cyanoleuca*, Hartl. Journ. f. Orn. 1854, p. 2; id. Orn. Westaf. p. 31 (1857), Müller, Journ. f. Orn. 1855, p. 8; Gurney, Ibis, 1868, p. 265, *Halcyon senegalensis*, Mont. P.Z.S. 1865, p. 94; Gurney, Ibis, 1865, p. 265, Layard, Birds of S. Afr. p. 62 (1867).

tion being the thalassine-blue colour on the head, and the black streak through the eye, which in the latter species only just encircles that organ while in *H. cyanoleuca* it is produced over the ear-covert. Even in very young examples of the present bird, the blue on the head is very apparent. I have satisfied myself as to the birds from the above-mentioned localities, really belonging to *H. cyanoleuca*, by an actual examination of all of them except the bird from Angola. No doubt, however, this bird is rightly identified, as the Benguela specimen is certainly referable to the present species.

In a recently received collection of the late indefatigable naturalist Mr. C. J. Andersson, I was delighted to find a series of *H. cyanoleuca* from Ondonga in the Ovampo Country, situated to the north of Damara Land, and amongst these was one young bird which had the beak very short, and of an orange colour variegated with black. The bird from the Monocusi River, forwarded by Mr. Ayres, is now in the collection of the Rev. H. B. Tristram, and is the most beautiful specimen I have yet seen. I have taken advantage of his kindness in lending it to me to figure it in the accompanying plate.

My friend Mr. J. J. Monteiro has given me the following note on this species as observed by him in Benguela, where it is by no means rare.

"These birds are very abundant all over Angola and the country that I have explored (Loango to Little Fish Bay), wherever trees are found, whether in the vicinity of water or not. They are always to be seen on the tops of trees, preferring a dead or bare branch, where, during the hottest part of the day, they constantly repeat a loud plaintive, whistling song; the loud monotonus droning of the cicadæ being the only other sound to break the silence of noon, under the fierce glare of the tropical sun."

Mr. Layard has lately sent me two specimens of *H. cyanoleuca* from the Cape Colony. One of these was from Mosilikatze's country, while the other was forwarded to him from the Knysna by his zealous correspondent Mr. Atmore.

The description, measurements and the lower figure in the plate are taken from the specimen from the Monocusi River, kindly lent me by Mr. Tristram. The upper figure is taken from a young bird in my collection from the Zambesi River.

HALCYON SENEGALENSIS.

HALCYON SENEGALENSIS.

(SENEGAL KINGFISHER.)

Alcedo senegalensis	Linn. Syst. Nat. I, p. 180 (1766).
Halcyon senegalensis . . .	Swains. Zool. Illustr. 1st ser. I, pl. 27 (1821).
Dacelo senegalensis	Less. Traitè d'Orn. p. 247 (1831).
Cancrophaga senegalensis, . .	Bonap. Consp. Vol. Anis. p. 9 (1854).
Halcyon cancrophaga, . . .	Heugl. Syst. Ubers. p. 18 (1856, *nec. Lath.*)
Martin-pecheur a tête grise de Sénégal,	Buff. Pl. Enl. 594.

H. maxillâ rubrâ, mandibulâ nigrâ: scapularibus lætè thalassimo lavatis: minor: pileo obscurè cinereo: striâ nigrâ a basi maxillæ oculum circumdante, haud posticè productâ.

Hab. in Africa occidentali et in Abyssiniâ.

Head and back of the neck ashy-grey; back, scapularies and upper surface of the tail bright cobalt, especially on the rump; the whole of the upper wing-coverts deep black; primary coverts cobalt; quills black, white at the base, the outer web, especially of the secondaries, broadly edged with bright cobalt; tail cobalt above, black beneath, the inner web black along the edge, as also the shaft, the whole tail entirely black underneath; lores white, produced backwards over the eye forming a very distinct eyebrow; cheeks, sides of the neck and upper part of the breast ashy-grey with a slight blue lustre and minutely vermiculated; throat and abdomen white, flanks grey; upper mandible deep vermilion, lower mandible jet black; feet black; eyes black. Total length 8.5 inches, of bill from front 1.7, from gape 2.1, wing 4.0, tail 3.0, tarsus 0.4, middle toe 0.7, hind toe 0.3.

Hab. Senegambia (*mus Lugd.*), R. Gambia (*mus. Brem.*), Sierra Leone (*Bowdich*), River Niger (*Thomson*), Bonny River (*Jardine*), Cameroons (*mus. R. B. Sharpe*), Gaboon (*Verreaux*), Camma River (*Du Chaillu*), Angola (*Monteiro*), Benguela (*Anchieta, Sala*), White and Blue Niles (*Heuglin*), Bogos Country (*Jesse, Blanford*), Gazelle River (*Antinori*), Meninga (*Speke*).

Additional references.—*Alcedo senegalensis*, Gm. Syst. Nat. I, p. 455 (1788); Vieill. Encl. Meth. I, p. 283 (1823): *Halcyon senegalensis*, Swains. Birds of W. Afr. II, p. 97 (1837); Gray, Gen. of Birds, I, p. 79 1846); Jard. Ann. Nat. Hist. XVII, p. 86 (1846); Ferr. Voy. en Abyss. Zool. III, p. 248 (1847); Gray, Cat. Fiss. Brit. Mus. p. 53 (1848); Bonap. Consp. Gen. Av. I, p. 155 (1850); Verr. Rev. et Mag. de Zool. 1851, p. 266; Reich. Handb. *Alced.* p. II. t. cccc. fig. 3077 (1851); Cass. Cat. Halc. Phil. Mus. p. 8 (1852), Hartl. Journ. f. Orn. 1854, p. 2; Müll. Journ. f. Orn. 1855, p. 7; Cass. Proc. Phil. Acad. 1856, p. 320; Hartl. Orn. Westafr. p. 31 (1857); Cass. Proc. Phil. Acad. 1859, p. 33; Heine, Journ. f. Orn. 1860, p. 187; Cab. and Heine, Mus. Hein. th. II, p. 472 (1860); Du Chaillu, Eq. Afr. p. 472 (1861); Hartl. Journ. f. Orn. 1861, p. 104; id. P.Z.S. 1863, p. 105; Sclater, P.Z.S. 1864, p. III; Heugl. Journ. f. Orn. 1864, p. 332; Antin. Cat. Ucc. p. 28 (1864); Hartm. Journ. f. Orn. 1866, p. 201; Bocage, Jorn. Acad. Lisb. 1867, p. 134; Gray, Handb. of B. p. 90 (1869).

This species is closely allied to the Angola Kingfisher (*Halcyon cyanoleuca*) but appears never to obtain the bright blue head of the latter bird, and moreover does not have the black stripe through the eye produced backwards so far over the ear-coverts. It is also a somewhat smaller bird, as the following comparative measurements clearly demonstrate:—

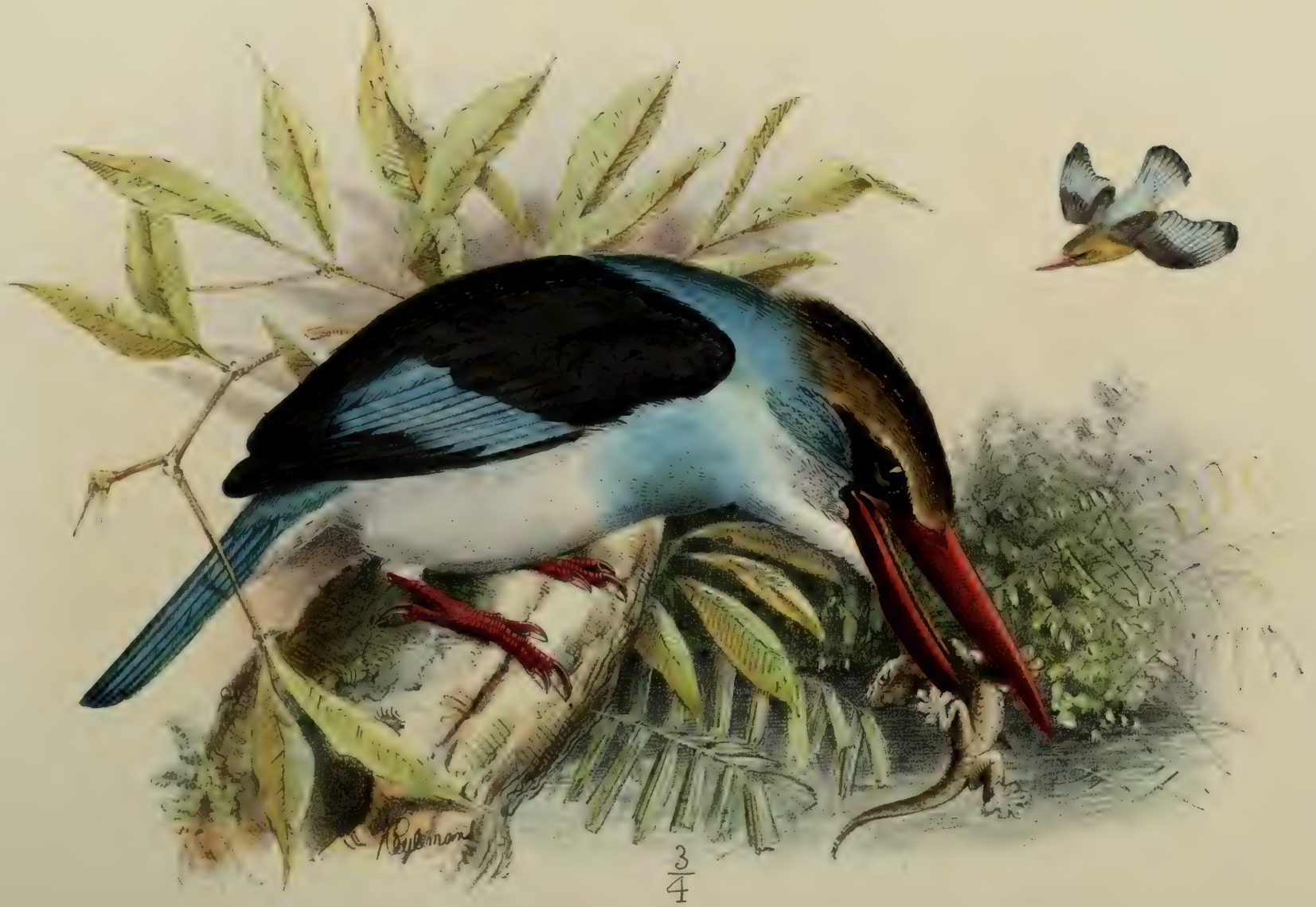
No.	Sex.	Name.	Locality.	Authority.	Long tot.	Rostr.	Al.
1		*H. senegalensis*	Cameroons.	mus. R. B. S.	7·5	1·6	3·7
2	♀	„	Gaboon.	Verreaux.	7·5	1·6	3·75
3	♂	„	Angola.	mus. R. B. S.	8·0	1·6	4·0
4		„	Senegambia.	mus. R. B. S.	8·0	1·7	4·0
5	♀	„	Rio Dande.	Sala.	8·0	1·8	3·8
6	♂	„	Benguela.	Sala.	8·0	1·9	4·0
7		„	White Nile.	Petherick.	8·3	1·7	3·9
8	♂	*H. cyanoleuca.*	Ondonga.	Andersson.	8·5	2·0	4·7
9	♂	„	„	„	8·5	1·9	4·5

There seem to me to be considerable differences between specimens of *H. senegalensis* from various localities, but the impossibility of getting a large series of carefully sexed specimens prevents the possibility of being able to account for them. So far as my experience goes, specimens from Benguela are larger than those from other parts of Western Africa. Young birds seem to be more dingily coloured, and to have the breast dark cinereous and the head dull brownish ashy. As the bird advances in age the head appears to become paler grey, till in very old examples it has a slight blue lustre. This, however, does not allow of its being confounded with *H. cyanoleuca*, as the *very old* birds of *H. senegalensis* never have the blue on the head so apparent as in the *young* of the other species, while the extent of the black stripe through the eye is a good distinguishing characteristic.

The MM. Verreaux have given an elaborate description of a young male (*l.c.*) from Gaboon which they found to be identical with specimens from Senegal, and they state "that this species frequents woods, where it lives principally on insects."

My friend Mr. Monteiro has recently obtained specimens in Angola at Ambriz, and also on the River Quanza. The stomach of one of the birds contained the remains of a small lizard, that of another large grasshoppers.

The description, measurements, and the figure in the accompanying plate have been taken from a specimen in my collection from Senegal.



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HALCYON DRYAS.

HALCYON DRYAS.

(WOOD KINGFISHER.)

Halcyon dryas. . . . Hartl. Journ. f. Orn. 1854, p. 2.
„ „ . . . „ Orn. Westafr. p. 32 (1857).
Dacelo „ . . . Schl. Mus. Pays Bas, *Alced.* p. 30 (1863).

H. maxillâ rubrâ, mandibulâ nigrâ: scapularibus nigerrimis: major: capite summo brunneo: dorso, genis, et pectore superiori viridi-thalassinis: hypochondriis cinereis, thalassino lavatis. *Fœm.* vix à mari diversa.

Hab. in regione aquatoriali Africæ Occidentalis.

Crown of the head brown, tinged with greenish, especially towards the nape; back sea-green, deeper and more intense on the rump and upper tail-coverts; scapularies and upper wing-coverts deep black; wing-feathers blackish, the outer web shining green towards the base, which is white; tail above sea-green, each feather having the shaft black, and being edged and tipped with the same colour; under surface black, a line above the eye dusky white; a broad band surrounding the eye and extending backwards along the side of the head, together with a spot at the base of the lower mandible black; throat, white; cheeks, sides of the neck and upper parts of the breast shining sea-green; flanks, thighs, and under tail-coverts ashy tinged with bluish green; upper mandible deep coral red, under mandible black; feet red; eyes dark brown. Total length 11. Length of bill from front 2, from gape 2.5, wing 4.9, tail 3.5, tarsus .5, middle toe .9, hind toe .4.

Hab. St. Thomas *(Mus. Hamb.)*, Ilha do Principe *(Dohrn; Keulemans)*, Rio Boutry *(Pel, Mus. Lugd.)*, Gaboon *(Verreaux)*, Camma River *(Du Chaillu)*.

This species is allied to the Ashy-fronted Kingfisher *(H. cinereifrons)*, but may at once be distinguished by its larger and altogether stouter form, as well as by the colour of the head. The sea-green colour of the back is also of another shade, being not so blue as in the former bird, but as this colour varies very much in different lights, it is very difficult to paint or describe it. The differences, however, will be apparent on an examination of specimens.

The range of the present species does not seem to be as extended as that of most of its congeners, and is apparently confined to the West Coast of Africa in close proximity to the line of the Equator. Of its habits nothing was known until the recent visits of Dr. H. Dohrn and Mr. J. G. Keulemans to Ilha do Principe, and I am indebted to the latter gentleman for the use of his notes on this bird, which were made during his residence in the island, and to which I shall presently refer.

Additional references. *H. dryas;* Mull. Beitr. Orn. Westafr. pl. 11. (1854); Verr. Rev. et. Mag. Zool. 1855, p. 272, Cass. Proc. Phil. Acad. 159, p. 34; Keul. Ned. Tidschr. 1866, p. 376, Dohrn, P. Z. S. 1866, p. 325.

Dr. Dohrn (*l. c.*) observes:—"The manner of life of this bird reminded me of our owls. I often observed them in the day-time sitting motionless on a branch, as if they were fast asleep, in dark shady localities. The smalls birds strongly dislike them; I supposed that sometimes their children are not refused by the *Halcyones* for a meal. As soon as they are discovered in their retreat, lots of *Nectariniæ Zosteropes*, &c., are around them, and amuse themselves with abusing them; finally the *Halcyon* leaves the place with a short shrieking outcry. If not annoyed, he has a soft melancholic tune which sometimes appeared to me like soft and weeping cries of a child. They usually feed upon big insects; and I found often in their stomach pieces of snails, especially of *Columna flammea*. They live in the woods, in the neighbourhood of small streams. Their name on the island is 'Chocho.'"

Mr. Keulemans with more precision gives the following additional details with regard to the life-history of this hitherto little-known species:—

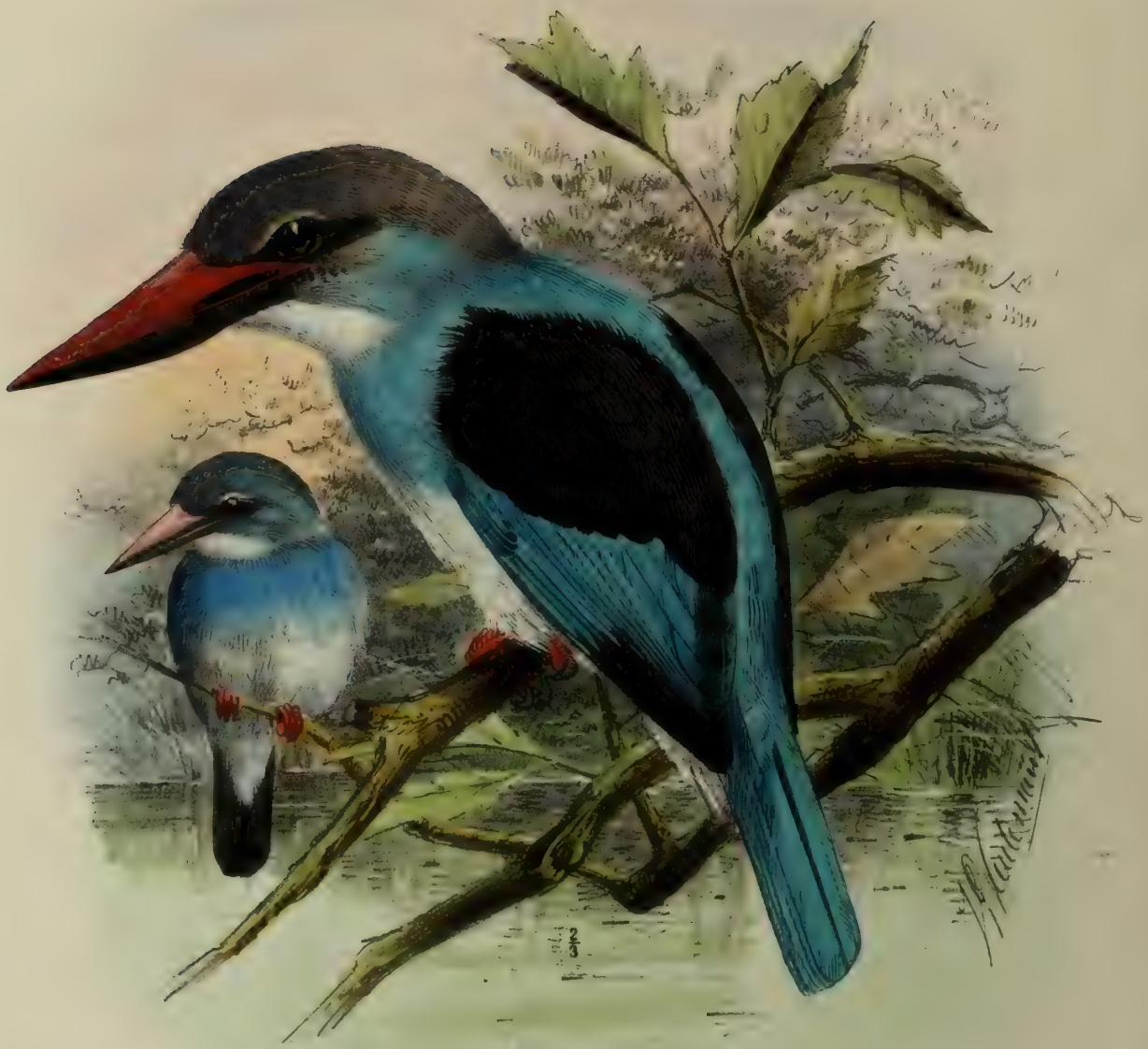
"This bird inhabits Ilha do Principe, where it is very common and remarkably tame. It is generally met with in the forests, near any river or rivulet, sitting on a branch growing over the water, and on the look-out for water-insects, small fishes, &c. It evinces great partiality for snails. When it has found one it descends, seizes it in its great beak, and returns again to its resting-place. Sometimes great numbers of snail-shells may be seen strewed about under the place where the bird has been sitting. During the rainy season, when snails are very plentiful, the Kingfisher catches so many in the morning, that it is scarcely able to fly in the after-part of the day, and then may be seen sitting half-asleep without the least sign of life. I often saw it in this state and have caught specimens with a horse-hair noose fastened to the end of a short stick. When captured, it makes a peculiar noise, crying *chék*, *chék*, *chék*, which the smaller birds (*Zosteropes*, *Cuphopteri*, *Symplectes*, *Nectariniæ*, etc.) no sooner hear, than they surround the unfortunate bird, coming very close and persecuting it, all the while screaming vociferously. I have seen as many as sixty birds surrounding one Kingfisher and tormenting it. In the day-time the latter seems to be afraid of the small birds, but in the early morning, when it has not over-eaten itself, the tables are turned, and the Kingfisher is then master of the field."

"Having observed the hatred exhibited by the small birds for this species of *Halcyon*, I stuffed a specimen, and by placing it in a conspicuous place I was soon able to procure as many small birds as I wanted."

"The *Halcyon dryas* hatches its young during the months of August and September before the commencement of the rainy season. Its builds no nest, and the female lays two or three glossy white eggs upon the mould in the hole of a tree. Generally these holes are very deep and very dirty. Notwithstanding the latter fact, however, the young birds are always clean and handsome, but they have a very disagreable smell."

"The sexes are alike, and the young on leaving the nest are the same size as their parents, but differ considerably in colour. They are very brown on leaving the nest. In the second month the colour becomes paler and more greenish; in the third month the blue of the wing feathers, back and tail, becomes more distinct and brighter, and the under parts are more blueish; in the fourth month, the above-mentioned blueish parts are nearly clear, and the brown on the ears and neck becomes yellowish. From the above notes it will be seen that the young assume the adult plumage gradually. I shot altogether about forty specimens during my stay in the island, of which nearly thirty were young birds, all of them differing according to their age. The native name is Dyo-dyo or Djoo-djoo, which signifies stupid."

The large figure in the plate represents an old male shot by Mr. Keulemans himself now in the Leiden Museum. The small figure flying in the back-ground is a young bird.



HALCYON MALIMBICA.

HALCYON MALIMBICA.

(ASHY-FRONTED KINGFISHER.)

Alcedo malimbica	Shaw, Gen. Zool. VIII. p, 66 (1811).
Halcyon malimbica	Cass. Cat. Halc. Phil. Mus. p. 8 (1852).
Cancrophaga malimbica	Bonap. Consp. Vol. Anis, p. 9 (1854).
Alcedo cinereifrons	Vieill, Nouv. Dict. d'Hist. Nat. XIX. p. 403 (1818).
Halcyon cinereifrons	Gray, Gen. of Birds, I, p. 79 (1846).
Todiramphus cinereifrons	Blyth, Cat. Birds Mus. As. Soc. Beng. p. 48 (1849).
Cancrophaga cinereifrons	Bonap. Consp. Vol. Anis. p. 9 (1854).
Dacelo cinereifrons	Schl. Mus. Pays Bas, *Alced.* p. 29 (1863).
Halcyon torquatus	Swains. Birds of W. Afr. II, p. 99 (1837).
Halcyon torquata	Müll. Journ. f. Orn. 1855, p. 7.

H. maxillâ rubrâ, mandibulâ nigrâ: scapularibus nigerrimis: minor: pileo cinereo.

Hab. in Africâ occidentali.

Adult. Entire head ashy-grey, becoming tinged with blue on the nape; back, from the nape to the rump, rich cobalt; scapularies and wing-coverts jet black; quills black, the inner web white at the base, the basal half of the exterior web of the primaries, and nearly the entire outer web of the secondaries, brilliant cobalt; tail dark cobalt above, black beneath; throat, and a narrow line over the eye, white; space between the bill and the eye, feathers round the eye extending backwards over the ear-coverts, deep black; cheeks, ear coverts, sides of the neck and the breast, greenish cobalt; abdomen and under tail-coverts, white; flanks grey, with obscure vermiculations; upper mandible vermilion, black at the base and towards the tip, lower mandible jet black; feet red. Total length 10 inches, of bill from front 2.3, from gape 2.7, wing 4.6, tail 3.2, tarsus 0.5, middle toe, 0.8, hind toe, 0.35.

Very old. Head ashy, all except the forehead itself washed with cobalt; entire back exceedingly rich cobalt; tail bright blue above, black beneath; throat and abdomen pure white, under tail-coverts distinctly washed with cobalt and vermiculated; flanks washed with a cobalt lustre. Total length 10.5 inches, of bill from front 2.3, from gape 2.7, wing 4.5, tail 3.0, tarsus 0.5, middle toe 0.8.

Additional references.—*Halcyon malimbica*, Sharpe, Ibis, 1869, p. 282: *Alcedo cinereifrons*, Bon. et Vieill. Encl. Meth. I, p. 395 (1823); Vieill. Gal. des Ois. pl. 187 (1825); *Halcyon cinereifrons*, Jard. Ann. Nat. Hist. XVII, 86 (1846); Gray, Cat. Fiss. Brit. Mus. p. 53 (1848); Sundev. Ofv. 1849: p. 162, Verr. Rev. et Mag. de Zool. 1851, p. 265; Hartl. Journ. f. Orn. 1854, p. 2; id. Orn. Westafr. p. 45 (1857); id. Journ. f. Orn. 1861, p. 104; Layard, Birds of S. Afr. p. 64 (1867); Gray, Handl. of B. p. 90.

Hab. Senegal (*mus. Lugd.*, *Philad.*), River Gambia (*mus. Brem.*), Casamanze (*Verreaux*, *mus. R. B. S.*), Sierra Leone (*Afzelius*), Rio Boutry (*mus. Philad.*), River Bonny (*Jardine*), Gaboon (*Verreaux*), Angola (*Monteiro*), Natal (*mus. Philad.*).

This beautiful Kingfisher is closely allied to the Wood Kingfisher (*Halcyon dryas*), from which, however, it differs in being less robust, and in having the head ashy-grey instead of dark brown; the lower mandible, also, is never such a deep black in *Halcyon dryas*.

We unfortunately know but little of the habits of the present bird. Mr. Monteiro (*l.c.*) has recorded the following observations with regard to its occurrence in Angola :—

"Not uncommon near Bembe in the thick woods at the bottoms of the ravines, where there is water. Subsists on insects. Seen sitting on a branch, head aloft, whence they dart forth to secure their prey and return. Called *Telampuica*."

I am not quite satisfied that the present species really occurs in Natal. The only evidence of its being found there rests on the evidence of a single specimen in the Philadelphia Museum, but as I am able to discover, it has never been since met with in that locality. I am inclined to consider *H. malimbica* a purely West African species, possessing, however, tended range than its congener, *H. dryas*.

The subjects of the accompanying plate have been taken from two specimens in my own collection. The foremost figure represents a Senegambian bird from Casamanze, purchased of Verreaux. This is the specimen described above as "adult," and exhibits the usual state of plumage in which the bird occurs. The hinder figure represents a most splendid bird from Gaboon, also purchased of Verreaux. It differs from every other specimen I have seen in having the blue much more brilliant, the black much more deep, and the whole of the head distinctly washed with a beautiful blue lustre, the forehead alone being decidedly ashy. This bird might well be taken for a distinct species, but after careful consideration, I think it can only be the extremely old bird of *H. malimbica;* as such I have described it above, and figured it.

HALCYON ALBICILLA.

HALCYON ALBICILLA.

(WHITE AND GREEN KINGFISHER.)

Alcedo albicilla . .	Cuv. MS. *undè.*
Alcedo albicilla . .	Dumont, Dict. Sci. Nat. XXIX, p. 273 (1823); Pucher. Rev. Zool. 1853, p. 388; Cass. U. S. Expl. Exp. p. 225 (1858).
Dacelo albicilla . .	Less. Traitè d'Orn. p. 247 (1831); Schl. Mus. Pays Bas, *Alced.* p. 42 (1863); id. Vög. Ned. Ind. pp. 32, 61, pl. 11 (1864).
Halcyon albicilla . .	Gray, Gen. of B. I, p. 79 (1846); id. Cat. Fiss. Brit. Mus. p. 56 (1848); Scl. Proc. Linn. Soc. 1858, p. 156; Gray, B. Trop. Isl. Pacif. Oc. p. 5 (1859); Gray, P. Z. S. 1859, p. 153; id. P. Z. S. 1861, p. 433; Hartl. P. Z. S. 1867, p. 829; Hartl. & Finsch, P. Z. S. 1868, pp. 4, 118; Gray, Handl. of B. I, p. 93 (1869); Gray, Ann. Nat. Hist. 1870, p. 329.
Todirhamphus albicilla .	Reich. Handb .*Alced.* p. 30, t. cccxviii, figs. 3134-35 (1851); Bonap. Consp. Vol. Anis. p. 9 (1854).
Halcyon saurophaga .	Gould, P. Z. S. 1843, p. 103; id. Voy. Sulphur, p. 33, pl. 10 (1844); Gray, Handl. of B. I, p. 93 (1869).
Todirhamphus saurophagus	Bonap. Consp. Gen. Av. I, p. 157 (1850); Cass. Cat. Halc. Phil. Mus. p. 11 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Cass. U. S. Expl. Exp. p. 213 (1858).

Tanatick of the Natives of the Pelew Islands *(Hartlaub).*

H. rostro nigro, mandibulâ versus basin nigricante: pileo toto colloque pure albis, lineâ strictâ pone oculos nigricanti-viridi.

Hab in sub-regione Austro-Malayanâ.

Adult. Entire head, neck, upper portion of the back pure white; middle of the back and scapulars dull green, lower portion of the back, rump, and upper tail-coverts bright cobalt; wing-coverts dull cobalt tinged with green; quills black, externally edged, especially on the secondaries, with cobalt; tail dull cobalt above, greyish black beneath; lores dusky; feathers round the eye black, with a line of greenish feathers extending from the eye over the ear-coverts.

Young. Upper surface of the body blueish green, duller on the interscapulary region and brighter on the rump, where it inclines to cobalt; a small loral spot, a nuchal spot, a broad collar encircling the neck, and the entire under surface of the body pure white; bill black, yellowish at the base of the lower mandible; feet olive-brown.

Hab. Marianne Islands (*Quoy and Gaimard*), Pelew Islands (*mus. Godeffroy*), Batchian (*Bernstein*), Morty Island (*Bernstein*), Gilolo (*Wallace*), Mysol (*Wallace*), New Guinea (*Wallace, von Rosenbery*), New Ireland (*G. R. Gray*), Solomon Islands (*Brenchley*).

The present species was originally brought from the Marianne Islands by the Expedition of the "Uranie and Physicienne," and Dr. Pucheran is inclined to consider the bird from these islands as specifically distinct from that of New Guinea and the Moluccas; but I think there is very little chance of these two birds being distinct, for the recent researches of Mr. Godeffroy's collectors have shown us that the species is found in the Pelew Islands, and it would be unlikely that the bird occurring in the Marianne Islands, which are situated to the northward, would be of another species. I incline to the opinion that it is perhaps migratory, ranging from the Mariannes southward directly through the Moluccas to New Guinea, and then to the eastwards to the Solomon Islands; but this is mere conjecture which it will remain for future observations to confirm or dispel.

Old birds of *H. albicilla* have the head all white as represented in the plate, and I believe the very different-looking bird which forms the hinder figure is nothing but the very young of the present bird, for it is not uncommon to find a white-headed bird with the remains of a few green feathers on the crown, while Dr. Hartlaub mentions (*l.c.*) several intermediate forms of plumage.

Mr. Wallace informs me that the present species "frequents the rocky and forest-clad sea-coasts of New Guinea, Waigiou and Gilolo, feeding on fish and small crustaceans."

The description of the old bird is from a skin in my own collection obtained by Mr. Wallace in New Guinea, while the young bird is from a specimen from the Pelew Islands obtained from Mr. Godeffroy. The figures are drawn from the same birds.

HALCYON LEUCOPYGIA.

HALCYON LEUCOPYGIA.

(WHITE-BACKED KINGFISHER.)

Cyanalcyon leucopygius . Verr. Rev. et Mag. de Zool. 1858, p. 305.
Halcyon leucopygia . . Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 7 (1859); Scl. P. Z. S. 1869, p. 119; Gray, Handl. of B. I, p. 92 (1869).

H. pileo saturatè ultramarino: dorso toto albo: crisso lilacscenti-rubro.

Hab. in insulis "Solomon" dictis.

Head, scapulars and wing-coverts, and upper part of the back, rich ultramarine; a collar round the neck, the entire back except the interscapulary portion, and the under-surface of the body, pure white; cheeks black; upper tail-coverts ultramarine; lower part of the flanks bordering the rump, and vent, lilac shaded with purple; quills and tail black washed with blue above, greyish black underneath; bill entirely black; feet olive-brown. Total length 8·2 inches, of bill from front 1·6, from gape 2·1, wing 3·3, tail 2·5, tarsus 0·5.

Hab. Solomon Islands (*Verreaux*).

This beautiful Kingfisher is, I believe, only represented in Europe by a single specimen, now in the British Museum. The description and figure are taken from this bird.

HALCYON NIGROCYANEA.

HALCYON NIGRO-CYANEA.

(BLACK AND BLUE KINGFISHER.)

Halcyon nigro-cyanea . Wall. P.Z.S. 1862, p. 165, pl. xix; Gray, Handl. of B. I, p. 93 (1869).
Dacelo nigro-cyanea . Schl. Ned. Tijdschr. Dierk. III, p. 250 (1865).

H. pileo saturate ultramarino: interscapulio et scapularibus nigerrimis: dorso postico et uropygio lætissim è cyaneis: gutture et torque pectorali albis: corpore reliquo subtus saturatè ultramarino. *Fem.* suprà mari similis sed subtus alba, torque latâ pectorali ultramarinâ.

Hab. in parte septentrionali Novæ Guineæ occidentalis.

Male. Head intense ultramarine, brighter on the sides, a line of brilliant ultramarine commencing at the back of each eye and encircling the nape; middle of the back and scapulars deep velvety black, a blue lustre being apparent here and there on the latter; wing-coverts deep ultramarine, the innermost greater coverts more brilliant, inclining to cobalt; quills black, the outer web washed with deep ultramarine; lower portion of the back and rump brilliant cobalt; upper tail-coverts deep ultramarine; tail deep ultramarine above, black beneath; cheeks and ear-coverts jet black; chin dusky black; throat and a narrow band across the centre of the breast, white; rest of the under surface of the body deep ultramarine, becoming black on the sides of the body and lower abdomen; under wing-coverts black; bill black, yellow at the extreme base; feet black. Total length 8·5 inches, of bill from front 1·9, from gape 2·3, wing 3·5, tail 2·8, tarsus 0·5, middle toe 0·8, hind toe 0·3.

Female. Upper surface as in the male; entire under surface white, with the exception of a broad pectoral band of deep ultramarine; sides of the body black; under wing-coverts black, some white; bill black, with more yellow on the basal portion of the lower mandible than the male. Total length 9 inches, of bill from front 1·9, from gape 2·25, wing 3·6, tail 2·8, tarsus 0·5, middle toe 0·8, hind toe 0·3.

Hab. North-Western part of New Guinea (*Wallace*, *Bernstein*).

This very beautiful species was first obtained in New Guinea by Mr. Wallace, who, however, only obtained the female bird. A full account of the male was given more recently by Professor Schlegel (*l.c.*), and by his kindness I am able to give a figure of this sex from a specimen lent me by him from the Leiden Museum.

Nothing has yet been recorded concerning its habits.

The upper figure in the plate represents the type which has been kindly lent me by Mr. Wallace. This is the identical specimen figured in the "Proceedings." The nearer bird is the male specimen lent me by Professor Schlegel. The descriptions and measurements are taken from the same birds.

HALCYON LAZULI.

HALCYON LAZULI.

(LAZULI KINGFISHER.)

Alcedo lazuli	Temm. Pl. Col. 508 (1830).
Halcyon lazuli	Gray, Gen. of B. I. p. 79 (1846).
„ „	Cass. Cat. Halc. Phil. Mus. p. 6 (1852).
Todiramphus lazuli	Bonap. Consp. Gen. Av. I. p. 157 (1850).
„ „	Reich. Handb. *Alced.* p. 30 (1851).
Cyanalcyon lazuli	Bonap. Consp. Vol. Anis. p. 9 (1854).
„ „	Cab. and Heine, Mus. Hein. th. II. p. 158, note (1850).
Dacelo lazuli	Schl. Mus. Pays Bas, *Alced.* p. 42 (1863).
„ „	Schl. Vog. Ned. Ind. *Alced.* pp. 31, 61, pl. 12 (1864).

♂ H. lætissimè lazulina: scapularibus cum dorso postico et uropygio cyanescentibus: maculâ lorali albâ: gutture albo: pectore toto lætissimè cyaneo.

♀ Mari similis, sed subtus alba: abdomine imo tantùm cyaneo.

Hab. in insulis "Ceram," "Amboina" dictis.

Adult male. Head and neck deep lazuli-blue, a little brighter behind the ear; cheeks and ear-coverts black washed with dark blue; back and scapulars brilliant silvery cobalt; wing-coverts dark blue washed with brighter blue; quills black, pale brown at the base of the inner web, the outer web margined with dark blue, the edging to the primaries being somewhat the lightest; tail dark blue above, black beneath; a spot in front of the eye and entire throat pure white; rest of the under surface of the body bright silvery cobalt, darker on the flanks; under wing-coverts very dark blue; bill black, yellowish at the base of the lower mandible; feet black. Total length 7·7 inches, of bill from front 1·7, from gape 2·2, wing 3·7, tail 2·3, tarsus 0·4, middle toe 0·65, hind toe 0·35.

Adult female. Exactly similar to the adult male, but the white extends all over the breast, the lower part of the belly alone being silvery cobalt.

Young male. Similar to the old female, but has a blue lustre pervading the white of the breast, and a blue feather here and there, shewing that the entire breast will ultimately become blue.

Hab. Amboina and Ceram (*Forsten, Wallace*).

This species is closely allied to *Halcyon diops*, but differs in having the abdomen bright blue in both sexes, so that it can never be confounded with that species. I regret that I

have received no information as to its habits, which, however, are doubtless similar to those of *Halcyon macleayi* and the other species of the subgenus *Cyanalcyon*, to which section the present bird also belongs.

My figures are taken from a pair of birds obtained by Mr. Wallace, and lent to me by that gentleman. The change of plumage through which the young bird passes is exemplified in a specimen in my own collection.

HALCYON DIOPS.

HALCYON DIOPS.

(TEMMINCK'S KINGFISHER.)

Alcedo diops . .	Temm. Pl. Col. 272 (1842).
Halcyon diops . .	Steph. Gen. Zool. XIII, p. 99 (1826); Gray, Gen. of B. I, p. 79 (1846); Cass. Cat. Halc. Phil. Mus. p. 6 (1852); Gray, Handl. of B. p. 92 (1869).
Todiramphus diops .	Bonap. Consp. Gen. Av. I, p. 157 (1850); Reich. Handb. *Alced.* p. 29, t. ccccxvi, fig. 3127 (1851); Cass. Cat. Halc. Phil. Mus. p. 8 (1852).
Cyanalcyon diops .	Bonap. Consp. Vol. Anis. p. 9 (1854); Cab. and Heine, Mus. Hein. th. II, p. 158 (1860).
Dacelo diops . .	Schl. Mus. Pays Bas, *Alced.* p. 41 (1863); id. Vog. Ned. Ind. *Alced.* pp. 30, 60, pl. 12 (1864).

H. rostro toto nigro: scapularibus viridi-cyaneis: subtus omninò alba. *Fem.* torque pectorali cyaneâ distinguenda.

Hab. in insulis "Batchian," "Gilolo," "Ternate," dictis maris moluccensis.

Male. Entire head very deep ultramarine; scapulars and lower portion of the back rich cobalt tinged with darker blue; wing-coverts rich ultramarine; quills black, the inner web of the primaries white at the base, the outer webs of all the feathers washed with intense ultramarine; tail deep ultramarine above, black beneath; lores, a nuchal spot, collar round the back of the neck and entire under surface pure white; bill entirely black; feet dark olive-brown.

Female. Similar to the male, but has no white collar and has a broad blue pectoral band.

Young male. Precisely similar to the old female, but the pectoral band mixed blue and white.

Hab. Batchian, Gilolo, Ternate (*Bernstein, Wallace*).

The island of Celebes has been given as a habitat of the present bird, but, I believe, on no reliable authority; in the same way Professor Reichenbach has stated it to be found in Amboina and Timor, while the Philadelphia Museum, according to the late Mr. Cassin, possesses a specimen from Ceram. I do not think any of the above localities can be depended upon, and I believe the range of the present bird to be restricted to the three islands mentioned above.

Mr. Wallace kindly sends me the accompanying note:—

"Iris dark brown; eats insects, dragon-flies, etc. I often saw it on the beach and in the cocoa-nut groves in the town of Ternate."

No.	Sex.	Locality.	Long tot.	Al.	Rostri.
1.	♂	Batchian	7·0	3·7	1·6
2.	♀	Batchian	7·0	3·6	1·6
3.	♂	Gilolo	7·4	3·4	1·8
4.	♂	Ternate	8·1	3·7	2·0

It is evident from the above measurements that considerable variation in size is to be found in specimens of this Kingfisher from the different islands, bnt no appreciable difference in coloration is perceptible. The descriptions are from Batchian specimens in my collection. Those from Gilolo and Ternate measured in the above table are in Mr. Wallace's collection.

HALCYON MACLEAYI.

HALCYON MACLEAYI.

(MACLEAY'S KINGFISHER.)

Halcyon macleayii	Jard. & Selby, Ill. Orn. pl. 101.
Todiramphus macleayi	Bonap. Consp. Gen. Av. I, p. 157 (1850).
Cyanalcyon macleayi	Bonap. Consp. Vol. Anis. p. 9 (1854).
Dacelo macleayi	Schl. Mus. Pays Bas, *Alced.* p. 41 (1863).
Halcyon incinctus	Gould, P.Z.S. 1837, p. 142.
Halcyon jaquinoti	Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 7 (1859).
Halcyon sancta	Diggles, Orn. of Austr. part 2 (1868, *plate only*).

H. pileo saturatè ultramarino: scapularibus lætè viridi-cyaneis: subtus omnino alba: rostro nigro, mandibulâ ad basin latè flavicante. *Fem.* mari omnino similis, sed torque collari albo nullo.

Hab. in Australasiâ.

Male. Head deep ultramarine ; upper part of the back and scapulars bright cobalt tinged with green in some lights ; lower part of the back and rump rich cobalt ; wing-coverts ultramarine, the innermost ones inclining to cobalt ; quills black, the inner web whitish at the base, the outer web washed with blue; tail deep ultramarine above, greyish-black beneath ; lores, a nuchal spot, a collar encircling the back of the neck and entire under surface white, inclining to fulvous on the flanks ; bill black, the lower mandible yellowish at the base; feet dark reddish brown. Total length 7·3 inches, of bill from front 1·5, from gape 1·9, wing 3·7, tail 2·5, tarsus 0·4, middle toe 0·6, hind toe 0·35.

Female. Similar to the male, but has no collar round the neck and the nuchal spot very small, sometimes almost indistinguishable, being only represented by a single whitish feather ; the deep blue of the head extends further than in the male, down on to the black.

Young male. Similar to the old male, but has the colours much duller and the blues shaded strongly with green ; the secondaries plainly tipped with greyish ; the lores, nuchal spot, collar round the neck and entire breast strongly tinged with rust-colour ; a few of the frontal feathers also edged with rusty.

Additional references.—*Halcyon macleayi*, Gray, Gen. of B. I, p. 79 (1846) ; id. Cat. Fiss. Brit. Mus. p. 58 (1848) ; Gould, B. of Austr. II, pl. 24 (1848) ; id. Intr. B. of Austr. p. 29 (1848) ; Reich. Vog. Neuholl. p. 34 (1850) ; Cass. Cat. Halc. Phil. Mus. p. 6 (1852) ; Macgill. Voy. Rattl. II, p. 356 (1852) ; Gray, P.Z.S. 1858, p. 190 ; id. Cat. Mamm. & B. of N. Guin. p. 55 (1858) ; Ramsay, Ibis, 1865, p. 84 ; Diggles, Orn. of Austr. pt. 2 (1868) ; Gray, Handl. of B. I, p. 92 (1869). *Todiramphus macleayi*, Reich. Handb. *Alced.* p. 29, t. ccccxvi, fig. 3124-25. *Cyanalcyon macleayi*, Cab. & Heine, Mus. Hein. th. II, p. 158 (1860) ; Gould, B. of Austr. I, p. 133 (1865).

Hab. Northern and North-Eastern Australia (*Gould*), as far south as the Clarence River (*Ramsay*), Lizard Island, Torres Strait (*Ramsay*).

Although nearly allied to the Moluccan *H. diops*, the present species may always be recognised by the following characters:—the extent of the yellow at the base of the bill is sufficient to distinguish the males, for in *H. diops* the mandible is entirely black or at most only a tiny spot of yellow is to be seen, while the basal half of the mandible in *H. macleayi* is always yellowish white; the females, however, of the two species are very dissimilar, that of *H. macleayi* being pure white underneath and having no blue pectoral band.

Messrs. Hombron and Jacquinot (Ann. Sci. Nat. 2cde ser. xvi, p. 315, 1841) mention a Kingfisher under the ungrammatical title of "*Alcedo diopthalmo-rufo-ventro*," which Mr. G. R. Gray subsequently named *Halcyon jacquinoti*. The locality is said to be Vavao, in the Tonga Islands; but recent explorations have failed to procure any Kingfisher of the subgenus *Cyanalcyon* in that locality, so that I think there can be little doubt that some mistake has occurred as to the habitat of the bird, for the description is certainly that of *H. macleayi*.

My good friend Mr. E. P. Ramsay has given me the following interesting note:—

"This beautiful species is very abundant in the neighbourhood of Grafton, on the Clarence River. Its range extends to the north as far as Lizard Island, Torres' Strait, while I have never known it to wander further south than the Clarence River district. In its habits it closely resembles *Halcyon sanctus*, but appears to prefer a more watery and scrubby district. During September, 1866, I found them breeding. They had excavated holes in the nests of the white ants which were on trees growing in a swamp about three miles distant from Grafton, their tunnel and nests being the same as those of *H. sanctus*. In this locality they were very numerous, and as I stayed some time in the neighbourhood I had ample opportunities of observing their habits. The note is a peculiar shrill cry not unlike that of a tree-cricket, for which at first I frequently mistook it. It is frequently varied, and not always of the same monotonous tone as that of *H. sanctus*. The eggs are four or five in number, round and pearly white, a little smaller than those of *H. sanctus*; they are laid in the latter end of September."

The following are Mr. Gould's notes on the species (*l.c.*):—

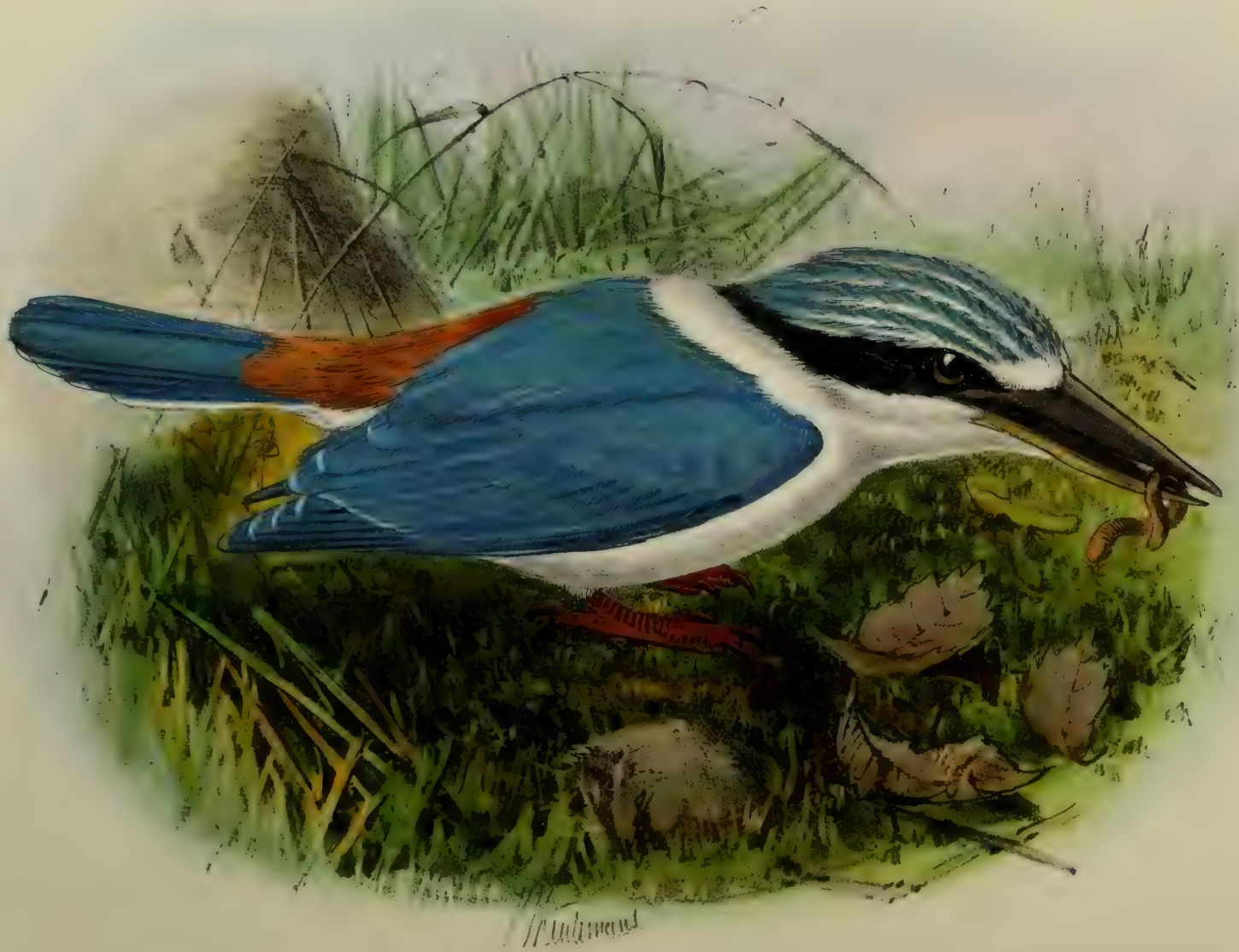
"The extreme brilliancy of the plumage of this bird would indicate that it is a native of the hotter portions of the country, and the correctness of this inference is borne out by the fact that it inhabits all the eastern provinces from Moreton Bay to the extreme northern portions of the continent; it is tolerably abundant at Port Essington, and it is also spread over nearly every part of the Cobourg Peninsula suited to its habits: like the other members of the genus to which it belongs it is rarely if ever seen near water, and evinces so decided a preference for the forests of the interior that it has obtained the name of "Bush Kingfisher" from the residents at Port Essington; it is generally dispersed about in pairs, and feeds on small reptiles, insects and their larvæ; its general note is a loud *pee-pee* uttered with considerable rapidity. It incubates in November and December, sometimes forming its nest in the hollow trunks of trees, and at others excavating a hole for itself in the nest of the tree-ants, which present so prominent and singular a feature in the scenery of the country; the nest of the *C. macleayi* is easily discovered, for on the approach of an intruder the birds immediately commence flying about in a very wild manner, uttering at the same time a loud piercing cry of alarm; the eggs are three or four in number, of a pearly white, and nearly round in form, being eleven lines long by ten broad."

Mr. Diggles in his "Ornithology of Australia" has figured only the male. On the same plate he figures what he calls "*Halcyon sanctus*," but the illustration is a capital representative of the young male *H. Macleayi*, and I have no hesitation in referring this figure to the present bird. His account of its habits is subjoined:—

"This handsome species is found in Queensland and the northern portions of

Australia. It is known as the "Bush Kingfisher," from its being frequently seen in thickly-wooded country. The food consists of insects generally, but more especially beetles. It differs from the *H. sanctus* in being confined to the coast, and it is seldom found inland at a greater distance than thirty miles. It may often be seen in gardens in the neighbourhood of Brisbane, and when undisturbed becomes very familiar. Its nest is usually to be found in the tea-tree swamps, or on the banks of creeks; the deserted nest of the white ant is hollowed out for the purpose of incubation, which takes place during the month of November, the eggs being merely deposited on the bare earth or material present. Nests may be often seen bulging out from the sides of iron-bark, swamp-oak and other trees. Macleay's Halcyon is plentiful at Cape York, in the winter and spring, but migrates to the southward during the hotter months of the year. The eggs, four or five in number, are much rounder in form and pearly-white—eleven by ten lines."

The figures and descriptions are from Queensland specimens.



HALCYON PYRRHOPYGIA.

HALCYON PYRRHOPYGIA.

(RED-BACKED KINGFISHER.)

Halcyon pyrrhopygia	Gould, P.Z.S. 1840, p. 113.
Todiramphus pyrrhopygius . . .	Bonap. Consp. Gen. Av. I, p. 157 (1850).
Cyanalcyon pyrrhopygia	Bonap. Consp. Vol. Anis. p. 9 (1854).
Sauropatis pyrrhopygia	Cab. and Heine, Mus. Hein. th. II, p. 161 (1860).
Dacelo pyrrhopygia	Schl. Mus. Pays Bas, *Alced.* p. 39 (1863).

H. dorso postico et uropygio rufis.

Hab. in parte centrali Australasiæ.

Head bright green, striped with white, more distinctly over the eye, thus forming a white eyebrow; cheeks and a narrow line round the back of the neck black; a spot in front of the eye and a collar round the neck white; middle of the back, scapulars, and wing-coverts bright greenish-blue; lower part of the back, rump, and upper tail-coverts bright chesnut; quills blackish, white on the inner web; the outer web, especially of the secondaries, edged externally with blue, and all except the primaries tipped with white, the outermost primary, however, being edged with the latter colour; tail-feathers bright greenish-blue above, blackish beneath, all the feathers tipped and the outermost edged with white; entire under-surface pure white; bill blackish, yellowish at the base; feet dark olive-brown; eye blackish- brown. Total length 8·7 inches, of bill from front 1·5, from gape 2·0, wing 4·1, tail 2·6, tarsus 0·4, middle toe 0·7, hind toe 0·25.

Hab. Central Australia (*Gould, Ramsay*).

No other *Halcyon* can be confounded with the present bird, which is at once to be distinguished from the other species of the genus by its red back. It is a very rare bird in collections, and the following appears to be all that is known of its habits and economy.

Mr. Gould, in his recent "Handbook," publishes the accompanying details:—

"This Kingfisher is an inhabitant of the interior, but over what extent of country is not yet known. The only parts where I myself observed it were the myall bushes (*Acacia pendula*) of the lower Namoi, particularly those growing on the edge of the large plain skirting the Nundawar range. It was usually seen sitting very upright on the dead

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Additional references.—*Halcyon pyrrhopygia*, Gray, Gen. of B. I, p. 79 (1846); Gould, Intr. B. of Austr. p. 30 (1848); id. B. of Austr. II, pl. 22 (1848); Gray, Cat. Fiss. Brit. Mus. p. 57 (1848); Reich. Vög. Neuholl. p. 277 (1850); Gray, Handl. of B. I, p. 92 (1869). *Todiramphus pyrrhopygius*, Reich. Handb. *Alced.* I, p. 33, t. ccccxx, fig. 3141 (1850); Cass. Cat. Hale. Phil. Mus. p. 4 (1852); id. U.S. Expl. Exp. p. 218 (1858); Gould, Handb. B. of Austr. I, p. 130 (1865).

branches of the myall and gum trees, sometimes on those growing out on the hot plains, at others on those close by the river side. I succeeded in obtaining both old and young birds, which, judging from the plumage of the latter, I should suppose had left their breeding-place about a month before I arrived in the neighbourhood of the Namoi in December. I also saw in this district the Common or Sacred Kingfisher, but in far less abundance than between the ranges and the coast. This latter species may be hereafter found to be an inhabitant of the country bordering the sea, while the Red-backed Kingfisher may be exclusively a denizen of the interior. The unusual colour of the back at once distinguishes it from all the other members of the genus inhabiting Australia, but in its general economy and mode of living it presents no observable difference."

"Gilbert procured examples of this species during Dr. Leichart's overland expedition; Captain Sturt found it at the depôt in South Australia; and I have received specimens from the interior of Swan River: consequently it has a very wide range."

Further on Mr. Gould continues :—

"Since the above account of this species was published in the folio edition, I have been informed by the late Mr. Elsey that he saw the Red-backed Kingfisher on the Macarthur River about one hundred miles from the coast, in lat. 26° 15′ S. Two eggs in my collection are very round in form and of the usual white colour, but they were doubtless pinky white before they were blown. They are one inch long by seven-eighths broad."

For the following note I am indebted to my kind friend, Mr. E. P. Ramsay of Dobroyde, N.S.W.:—

"At present I know nothing of the habits of this Kingfisher from personal experience, but I have received it from various parts of New South Wales far inland, and from Port Denison, where it was also procured at some distance from the coast. It appears to be confined to the central part of the southern corner of Australia, but to venture nearer to the coast in the northern part. Its eggs, three of which I have received from Southern Australia, could not be distinguished from those of *H. sancta*, of which species it is the Central Australian representative. The eggs in my collection are ·95 inches in length by ·9 inches in breadth. They are nearly round, more so than those of *H. sancta*. The sexes are alike both in size and plumage."

The figure and description are taken from a very fine skin in my collection from Australia.

HALCYON CINNAMOMINA.

HALCYON CINNAMOMINA.

(CINNAMON KINGFISHER.)

Halcyon cinnamomina	Swains. Zool. Illustr. 1st ser. II, pl. 67 (1821).
Todiramphus cinnamominus	Bonap. Consp. Gen. Av. I, p. 157 (1850).
Sauropatis cinnamomina	Cab. and Heine, Mus. Hein. th. II, p. 159 (1860).
Dacelo cinnamomina	Schl. Mus. Pays Bas, *Alced.* p. 39 (1860).
Alcedo ruficeps	Cuv. M.S. in Mus. Paris, *undè.*
"Alcedo ruficeps, Cuv."	Dumont, Dict. Sci. Nat. XXIX, p. 273 (1823).
Dacelo ruficeps	Less. Traitè d'Orn. p. 247 (1831).
Halcyon ruficeps	Gray, Handl. of B. I, p. 93 (1869).
Halcyon Reichenbachii	Hartl. Wiegm. Arch. 1852, p. 21.

H. major: supra viridis: pileo toto cinnamomeo, interdum medialiter viridi striato: torque nuchali cinnamomea: linea ab oculo orta nucham circumdata, nigro: subtus alba, gula cinnamomea. *Alt.* subtus cinnamomea, gula albicante et fasciis nigris transvittata, tectricibus alarum cinnamomeo fasciatis.

Hab. in sub-regione Austro-Malayanâ.

No. 1. Top and sides of head deep cinnamon, a narrow line of dull green proceeding from the back of each eye and encircling the nape ; back of the neck rather paler cinnamon; upper portion of the back and scapulars dull green, glossed with brighter green ; lower portion of the back bluish green; entire wing-coverts green ; quils dark brown, the inner web yellowish white at the base, the outer web, especially of the secondaries, margined with green ; tail blackish, the central feathers entirely green, the others washed rather broadly on the outer web with the same colour, under surface of the tail greyish-brown; throat and upper portion of the breast rich cinnamon ; rest of the under surface of the body pure white; bill black, the under mandible yellowish at the base; feet dark olive-brown.

No. 2. Head pale cinnamon, a few greenish feathers on the crown ; under surface of the body rich cinnamon, paler on the throat.

No. 3. Head deep cinnamon, striped thickly all over the crown with dark green feathers ; wing-coverts edged with rusty ; throat and upper portion of the breast, rest of the under surface of the body pale cinnamon, a few of the feathers on the upper part of the breast and sides of the neck edged with grey ; bill tipped with white.

Additional references.—*Halcyon cinnamomina*, Vig. and Horsf. Trans. Linn. Soc. XV, p. 206 (1827); Gould, Syn. B. of Austr. pt. III. (1838); Gray, Gen. of B. I, p. 79 (1846); id. B. of Trop. Isl. Pacif. Oc. p. 5 (1859); id. Handl. of B. p. 93 (1869). *Todiramphus cinnamominus*, Reich. Handb. *Alced.* p. 32, t. ccccxx, fig. 3140 (1851); Cass. Cat. Halc. Phil. Mus. p. 12 (1852); id. Un. St. Expl. Exp. p. 222 (1858). *Alcedo ruficeps*, Pucher. Rev. et Mag. de Zool. 1853, p. 367; Hartl. Journ. f. Orn. 1855, p. 423. *Halcyon Reichenbachii*, Finsch and Hartl. P.Z.S. 1868, p. 4; Gray, Handl. of B. I, p. 93 (1869).

No. 4. Head very dark cinnamon, thickly streaked with green ; back of the neck white strongly tinged with cinnamon, and margined with grey ; scapulars dull greenish ; wing-coverts all conspicuously margined with rusty ; entire under surface white, the feathers of the upper part of the breast margined with grey ; bill tipped with white.

Hab. Marianne Islands (*mus. Paris*) ; Island of Guam (*mus. Lugd.*) ; New Guinea (*Lesson ; mus. Lugd*) ; Marquesas Islands (*mus. Dresd.*) ; New Ireland (*G. R. Gray*), New Caledonia (*G. R. Gray*) ; Solomon Islands, Vanikoro (*mus. Philad.*) ; Pelew Islands (*Godefroy*) ; Phillipines (*mus. Lugd.*).

Mr. George Robert Gray (*l.c.*) gives as habitats of the present species the following localities " New Caledonia, New Hebrides," but on what authority I have not discovered, specimens from these places not being in the British Museum.

The different stages of plumage through which the present species passes are most difficult to define, and it is only by conjecture that I am able to form any opinion on the subject. So far as I can judge there is no fixed rule for the changes of plumage, young birds being found with the breast white and cinnamon. Such, for instance, are specimens 3 and 4 described above, which agree very well with each other as regards the plumage of the upper surface, as well as in having rusty edgings to the wing-coverts and the white tip to the bill. Specimen 2 I take to be more adult inasmuch as it has no edgings to the wing-coverts, and has nearly lost the green stripes down the centre of the head, while specimen 1 must be a very old bird as it has a uniform cinnamon head and a pure white breast. The form with the breast entirely white (*H. Reichenbachi*) I consider not to be a distinct species but to be the very old *H. cinnamomina.*

The British Museum has a specimen said to be from the Marquesas Islands, and agreeing with the *H. Reichenbachii* of Hartlaub ; but it should be observed that neither the specimens in the Dresden or British Museums are substantially authenticated, and I much question whether any dependence can be placed on the locality assigned. I am strengthened in my belief by the fact that the British Museum also possesses a specimen from Vanikoro, exactly intermediate between true *H. cinnamomina* and *H. Reichenbachii*, that is to say it has the throat white, the breast cinnamon, the belly much paler and fast becoming white

Lesson in the most astounding manner states (*l.c.*) that the present bird is in the gallery of the Paris Museum, and then asks if it can be the same as his *Syma torotoro.* Considering that he invented the latter appellation it is curious to find him not able to recognise one of his own species.

The three birds figured in the plate have been lent me by Professor Schlegel, and are the ones mentioned in his " Catalogue." The descriptions are from the same birds. No. 4 is described from a specimen from the Pelew Islands, very kindly lent me by Mr. J. Cesar Godefroy, of Hamburgh, who has done much to aid me in the preparation of the present work. This latter bird is the specimen mentioned by Drs. Finsch and Hartlaub (*l.c.*)

HALCYON AUSTRALASIÆ.

HALCYON AUSTRALASIÆ.

(CORONETTED KINGFISHER).

Alcedo australasia	Vieill. Nouv. Dict. d'Hist. Nat. xix, p. 419 (1818); Bonn. et Vieill. Enc. Meth. I, p. 397 (1823); Pucher. Rev. et Mag. de Zool. v, p. 389 (1853).
Halcyon australasiæ	Gray, Handl. of B. I, p. 93 (1869).
Sauropatis australasiæ	Cab. & Heine, Mus. Hein. th. II, p. 161 (1860).
Halcyon coronata	Müll. Verh. Nat. Gesch. I, p. 175 (1839); Gray, Gen. of B. I, p. 79 (1846); Wall. P. Z. S. 1863, p. 484.
Todirhamphus coronatus	Bonap. Consp. Gen. Av. I, p. 157 (1850); Cass. Cat. Halc. Phil. Mus. p. 11 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Cass. U. S. Expl. Exp. p. 218, pl. xix (1858).
Paralcyon coronata	Reich. Handb. *Alced.* p. 35, t. ccccxxi, fig. 3142 (1851).

H. rostro nigro, mandibulâ ad basin fulvescente: pileo medio viridi: collo postico cinnamomino: minor: coloribus saturatioribus.

Hab. In insulis "Timor" "Lombock" dictis.

Crown of the head green; forehead and a broad band encircling the head deep cinnamon; below this cincture another line extending from each eye round the back of the neck black, tinged with dark green; a collar round the back of the neck rich cinnamon; back and scapulars green, rather duller on the former, and both indistinctly waved with obscure bands in certain lights; lower part of the back, rump and upper tail-coverts bright blue; wing-coverts very bright blue; quills black, fulvous at the base, externally broadly washed with greenish blue; tail blue above, greyish black beneath; under surface rich cinnamon, paler on the throat which inclines to white; bill black, yellow at the base of the lower mandible; feet reddish brown. Total length 7·5 inches, of bill from front 1·5, from gape 2·0, wing 3·4, tail 2·0, tarsus 0·45, middle toe 0·5, hind toe 0·35.

Hab. Timor (*Müller*, *Wallace*), Lombock (*Wallace*).

This elegant species is very similar to the Cinnamon Kingfisher (*Halcyon cinnamomina*), of which it is a diminutive form. The colours are very similar, and M. Jules Verreaux informs me, that as in the last named bird, the plumage is subject to great variation; it is, however, a distinct species, much smaller in size and more richly coloured. Its range seems

to be restricted to the Islands of Timor and Lombock. It is to be regretted, therefore, that Vieillot bestowed upon the species a name so thoroughly inapplicable.

For the accompanying note I am indebted to the kindness of my friend Mr. Wallace :—

"This species was procured by me in Lombock and Timor, and when in the flesh measured $8\frac{1}{4}$ inches. It frequents thickets near the sea, and feeds on insects, especially grasshoppers."

The description, measurements and figure are taken from a specimen in Mr. Wallace's collection procured by him in Eastern Timor.

HALCYON LINDSAYI.

HALCYON LINDSAYI.

(LINDSAY'S KINGFISHER.)

Dacelo Lindsayi . . .	Vig. P.Z.S. 1831, p. 97; Eyd. & Souley. Voy. Bonite, p. 100, pl. 7 (1841); Schl. Mus. Pays Bas, *Alced.* p. 23 (1863).
Halcyon Lindsayi . . .	Gray, Gen. of B. I, p. 79, pl. 27 (1846); id. Cat. Fiss. Brit. Mus. p. 52 (1848); Bonap. Consp. Gen. Av. I. p. 154 (1850); Cass. Cat. Halc. Phil. Mus. p. 5 (1852); Gray, Handl. of B. I, p. 93 (1869).
Paralcyon Lindsayi . . .	Reich. Handb. *Alced.* p. 36, t. ccccxxi, figs. 3143-44 (1851); Bonap. Consp. Vol. Anis. p. 9 (1854).
Astacophilus Lindsayi . .	Cab. & Heine, Mus. Hein. th. II, p. 162 (1860).
Alcedo Lindsayi . . .	Martens, Journ. f. Orn. 1864, p. 18; id. Preuss. Exp. Ost. As. p. 189 (1865).
Dacelo Lessoni . . .	Vig. P.Z.S. 1831, p. 97.
Actenoides Lessoni . . .	Hartl. Journ. f. Orn. 1854, p. 64.

Salsac of the Natives of Luzon (*Eydoux and Souleyet*).

H. pileo lætè viridi, cinctu et strigâ mysticali læte cyanea: collo postico cinnamomeo: uropygio lætè cyaneo: subtus squamata, plumis albis viridi marginatis.

Hab. in insulis Philippinis.

Adult. Head olive-green, washed with clearer green, especially over the eye; forehead and lores with a stripe extending backwards over the eye, tinged with buff; sides and back of the head beautiful verditer, a moustachial stripe also of the same colour; ear-coverts and a narrow line of feathers running round the back of the head, black; a line extending from below the eye and encircling the neck so as to form a collar, as well as the entire throat, rich cinnamon; upper part of the back, scapulars and wing-coverts dull green, each feather spotted at the tip with ochre; lower part of the back and upper tail-coverts bright green, each feather mesially streaked with ochre; quills browny buff at the base of the inner web externally edged with buffy olive especially on the secondaries; tail olive brown, tipped with ochre, the external feather very short and banded with ochre; under surface white, breast and flanks broadly edged with greenish-brown, giving a scaly appearance; bill black, the lower mandible and a line on the upper mandible yellowish; feet olive-brown. Total length 9·6 inches, of bill from front 1·8, from gape 2·3, wing 4·3, tail 3 6, tarsus 0·6.

Young. Head dull olive-green, with a circlet of verdigris encircling the head from above the eye; a line of feathers from the base of the bill forming an eyebrow, and another

running below the ear-coverts fulvous; cheeks olive-green washed with verdigris; ear-coverts black; feathers of the sides and hinder part of the neck brown mottled with buff; rest of the upper surface of the body brown washed with green and spotted everywhere with fulvous, these spots being largest on the scapulars; quills and tail brown, edged with pale fulvous-brown, the latter barred on the inner web with the same colour; rump dull green washed with brighter green and longitudinally streaked with fulvous; throat and lower abdomen white, centre of the breast white, each feather margined with brown and green producing a mottled appearance; bill black, lower mandible yellow; feet reddish brown. Total length 10·7 inches, of bill from front 1·7, from gape 2·1, wing 4·3, tail 3·5, tarsus 0.6, middle toe 0·75, hind toe 0·4.

Hab. Philippine Islands, (*Cuming; mus. Brit.*).

It is to be regretted that nothing is at present known concerning the habits of this beautiful Kingfisher. All our information consists in the fact that it is an inhabitant of the Philipine Islands.

The description and figure of the adult bird are taken from a specimen in the British Museum procured at Cataguan by Cuming, those of the young bird from a specimen in my collection.

HALCYON CONCRETA.

HALCYON CONCRETA.

(SUMATRAN KINGFISHER.)

Dacelo concreta	Temm. Pl. Col. 346 (1825.)
Halcyon concreta	Gray, Gen. of B. I, p. 79 (1846.)
Paralcyon concreta	Reich. Handb. *Alced.* I, p. 36, t. ccccxxi. fig. 3145, t. ccccxxii, fig. 3145-46 (1851.)
Astacophilus concretus	Cab. & Heine, Mus. Hein. th. II, p. 161 (1860.)
Halcyon varia	Eyton, P.Z.S. 1839, p. 101.
Todiramphus varius	Blyth, Cat. B. Mus. As. Soc. Beng. p. 47 (1849.)

H. pileo viridi: collo postico et pectore cinnamomeis: dorso postico et uropygio lætissimé viridi-cyaneis.

Hab. in subregione Indo-Malayanâ.

Head dull green, with a line of brighter green from above the eye encircling the nape; below this bright green circlet a broad line of black; eye-brow and ear-coverts pale rufous; a line of feathers from the base of the bill down the sides of the neck deep ultramarine; back of the neck deep sienna, below which the back is black; upper part of the back and scapularies rich ultramarine; lower part of the back very bright cobalt; quills brown, inner web pale rufous at the base; the whole of the wing-coverts and the outer web of the quills rich ultramarine, uniform with the scapularies; tail blue above, black beneath; under surface of the body rich sienna, the middle of the abdomen white; upper mandible pale horn-colour, blackish along the top, under mandible orange; feet yellow. Total length 9 inches, of bill from front 1·9, from gape 2·3, wing 4·5, tail 2·2, tarsus 0·5, middle toe 0·75, hind toe 0·3.

Young. Exactly similar to the adult, but has the wing-coverts and scapulars spotted with ochre.

Hab. Borneo (*mus. Lugd*), Sumatra (*mus. Lugd*), Malacca (*mus. Brit.*).

Mr. Cassin was the first to propose the identity of the *Halcyon varia* of Eyton with Temminck's *Dacelo concreta*, and I have since proved the correctness of this identification, for on writing to Mr. Eyton, that gentleman very kindly examined the type-specimen and assured me that my surmises were correct.

Nothing has been recorded of its habits.

The description and figure of the old bird are taken from a Sumatran specimen in my collection. The young bird figured is in the British Museum.

Additional references.—*Dacelo concreta*, D'Orb. Dict. Class. d'Hist. Nat. t. 4 (1849); Schl. Mus. Pays Bas, *Alced.* p. 26 (1863); id. Vog. Ned. Ind. pp. 25, 57, pl. 8 (1864); *Halcyon concreta*, Gray, Cat. Fiss. Brit. Mus. p. 52 (1848); Bonap. Consp. Gen. Av. I, p. 154 (1850); Cass. Cat. Halc. Phil. Mus. p. 11 (1852); Gray, Handl. of B. I, p. 93 (1869.) *Todiramphus varius*, Blyth, J.A.S.B. xv, p. 11 (1846). *Halcyon varia*, Cass. U.S. Exp. p. 223 (1858.)

HALCYON HOMBRONI.

HALCYON HOMBRONI.

(HOMBRON'S KINGFISHER.)

Actenoides hombroni	.	Bonap. Consp. Gen. Av. I, p. 157 (1850); Reich. Handb. *Alced.* p. 36, t. ccccxxii, fig. 3147 (1851); Bonap. Consp. Vol. Anis. p. 9 (1854).
Actenoides variegata	.	Hombr. and Jacq. Voy. Pol. Sud. Zool. III, p. 101 (1853).
Halcyon hombroni .	.	Gray, Handl. of B. I, p. 93 (1869).

H. rostro nigro, versus basin flavicanti: pileo summo saturatè cyaneo: collo postico cinnamomeo: subtus rufescens.

Hab. in insula philippinensi "Mindanao" dictâ.

The name *variegata* seems to have been printed on the plate accompanying the "Voyage au Pol. Sud.," but the description was not published till 1853. In the meantime Prince Bonaparte had described the species fully in his "Conspectus," and I have therefore adopted his specific name.

In form *H. hombroni* appears to be closely allied to *H. lindsayi* of Luzon, which it replaces in Mindanao; but the latter bird is always distinguishable by its mottled breast.

The figure in the plate is taken from a painting by Mr. Huet which my friend M Jules Verreaux was kind enough to procure for me of the type specimen, which is still unique in the Paris Museum.

A very long description of the type is given in MM. Hombron and Jacquinot, which, owing to its length, I have not thought it worth while to transcribe, as the distinctive characters are pointed out in the diagnosis given above.

HALCYON SACRA.

HALCYON SACRA.

(WHITE-BROWED KINGFISHER.)

Sacred Kingfisher	Lath. Gen. Syn. I, p. 621, cum var. A (1772).
Alcedo sacra	Gm. Syst. Nat. I, p. 453, cum var. A (1788, *ex Lath.*); Bonn. et Vieill. Enc. Meth. I, p. 294 (1823).
Alcedo sacra	Lath. Ind. Orn. I, p. 250 cum var. B (1790).
Halcyon sacra	Finsch & Hartl. Faun. Centr. Polyn. p. 32 (1867); Gray, Handl. of B. p. 92 (1869).
Todirhamphus sacer (pt.) . . .	Bonap. Consp. Gen. Av. I, p. 156; Cass. Cat. Halc. Phil. Mus. p. 10 (1852).
Alcedo collaris, var. 1, 2 . . .	Forst. Descr. Anim. p. 163 (1844).
Dacelo coronata	Peale, U. S. Expl. Exp. p. 156, pl. 160 (1848); Hartl. Archiv. f. Naturg. 1852, p. 111.
Halcyon coronata	Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 5 (1859).
Dacelo albifrons	Peale, U. S. Expl. Exp. p. 156, pl. 144 (1848); Hartl. Archiv. f. Naturg. 1852, p. 110.
Dacelo vitiensis	Peale, U. S. Expl. Exp. p. 156, pl. 144 (1848); Hartl. Archiv. f. Naturg. 1852, p. 110.
Todirhamphus vitiensis . . .	Cass. U. S. Expl. Exp. pp. 195, 209; pl. xvi (1858).
Halcyon vitiensis	Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 5 (1859); id. Handl. of B. I, p. 93 (1869).
Halcyon superciliosa	Gray, Cat. Fiss. Brit. Mus. p. 56 (1848, *descr. nulla*); id. Handl. of B. I, p. 92 (1869).
Sauropatis superciliosa . . .	Cab. & Heine, Mus. Hein. th. II, p. 158 (1860).
Todirhamphus tuta (pt.) . . .	Cass. U. S. Expl. Exp. pp. 192, 206, pl. xv, figs. 1, 2 (1858).
Halcyon cassini	Finsch & Hartl. Faun. Centr. Polyn. p. 38 (1867).
Halcyon pealei	Finsch & Hartl. Faun. Centr. Polyn. p. 40 (1867).

H. rostro nigro, mandibulâ versus basin flavicante: uropygio viridi-cyaneo: pileo cum dorso toto, viridi-cyaneis: collo postico albo: capitis lateribus laté albis.

Hab. in Oceaniâ.

Very old. Head and neck white, with a few green feathers in the centre of the crown, and a line of black feathers slightly tinged with green from the eye enclosing the ear-coverts and encircling the neck; back and scapulars dull green; wing-coverts bright green tinged with blue; quills black, white at the base of the inner web, and externally edged with blue;

rump, upper tail-coverts and upper surface of the tail blue, with a slight greenish tinge in some lights, under surface of the latter greyish black ; under surface of the body white ; bill black, yellowish at the base of the lower mandible ; feet dull red. Total length 9·0 inches, bill 1·8, wing 4·6.

Adult. Top of the head blue, with a faint tinge of green towards the forehead ; a broad white line passing from the base of the bill over the eye and encircling the head ; below this a line of black feathers tinged with blue running under the eye, round the back of the neck, and enclosing the ear-coverts ; sides and back of the neck white, forming a nuchal collar ; back and scapulars dull greenish-blue; wing-coverts brighter blue, inclining to cobalt ; quills black, the inner web white at the base, the outer web, especially of the secondaries, edged with blue; lower portion of the back, rump and upper tail-coverts bright blue inclining to cobalt ; tail black, crossed with indistinct narrow bars, the upper surface deep blue, the under surface greyish-black ; entire under surface of the body white ; bill black, yellow at the base of the lower mandible ; feet reddish-olive ; eyes dark-brown. (*Tongataboo.*)

Young. Similar to the adult, but has the line of feathers surrounding the crown bright buff, and the white nuchal collar is also faintly tinged with the same colour ; the blue-colour of the head and body very bright. (*Tongataboo.*)

Another specimen has the superciliary line not so strongly tinged with buff. (*Tongataboo.*)

Another specimen has the superciliary line more plainly tinged with buff, traces of this colour being apparent also on the forehead ; slight traces of transverse marks are to be seen on the back of the neck and sides of the breast. (*Tongataboo.*)

Another specimen has no trace of buff on the superciliary line, but grey transverse markings on the feathers of the neck and sides of the breast, and has also fulvous edgings to the wing-coverts. (*Tongataboo.*)

Hab. Fiji Islands : Viti Levu (*Gräffe*), Ovalou (*Gräffe*). Friendly Islands : Tongataboo (*Home, Brenchley*). Samoa Islands : Tutuila (*Peale*).

The three groups of islands to which the present bird is confined are given by me above, and I believe that all other habitats with which the species is accredited are erroneous. At all events, these are the only ones which I believe to be authentic, so that I leave the exact range to be determined by some good Naturalist like Mr. Wallace, who will visit the islands of the Pacific Ocean and correctly determine the limits of the various faunæ, for I am convinced that many of the localities assigned to the birds from Oceania are altogether wrong. I cannot find in the map the locality of Santa Christina, where Forster mentions that he procured a Kingfisher, which he considered to be a further variety of his *Alcedo collaris*, var. 1 (from Tongatabu). This latter bird is certainly *H. sacra*, and I believe his var. 2 is only a little older specimen of the same bird.

Although Ornithologists have differed much in their determination of the "Sacred Kingfisher" of Latham, I believe that there can be little doubt that the bird here figured by me is really the species described by the above-named author, his "var. A" being the more adult bird. The variations in plumage of this Kingfisher are remarkable, and although I have figured three of the stages, there still remain one or two phases which I have not represented in the plate. Thus birds are met with which have the plumage inclining to bright blue with a cinnamon cincture encircling the crown, while in another stage, probably more adult, the plumage of the back is greenish blue and the superciliary cincture white, while the very old bird probably gets a *pure white* head. I have never seen a specimen with an absolutely white head, but there are examples in Mr. Gould's collection and in the

British Museum which have the crown white, with the exception of a few green feathers in the middle.

I have taken great pains to collate the synonymy of this species, and I believe with good effect. I have examined personally the types of Mr. Gray's *H. superciliosa*, which is the present bird in various stages of plumage, and to the kindness of my friends Drs. Hartlaub and Finsch I am indebted for the loan of the type of their recently described *Halcyon cassini*, which is certainly *H. sacra*. It is, however, to the credit of these eminent Naturalists to state that they are the only ones who have rightly identified the true *H. sacra* of Gmelin, and consequently their work is the only trustworthy guide to the correct synonymy of this and the allied species. As regards the *Halcyon pealei* of the same authors, I believe this also to be only a stage of *H. sacra*.

Mr. Brenchley has recently brought home a beautiful series of this Kingfisher from Tongataboo. Attached to one of his specimens now in my collection is the following note: "Male: eyes, dark brown: contents of stomach, crustacea: Tongatabu, July, 1865."

The descriptions are principally from specimens brought from Oceania by Mr. Brenchley. That of the very old bird, however, is taken from a specimen kindly lent me by Mr. Gould. The figures in the plate represent what I believe to be the very old bird (with the head almost white), the adult (with a white eyebrow), and the young (with a cinnamon coloured eyebrow).

HALCYON JULIÆ.

HALCYON JULIÆ.

(NEW HEBRIDES KINGFISHER.)

Sauropatis juliæ . . . . . Heine, Journ. f. Orn. 1860, p. 184.
Halcyon juliæ . . . . . Gray, Handl. of B. I, p. 93 (1869).
Dacelo grayi . . . . . Schl. Mus. Pays Bas, *Alced.* p. 37 (1863).
Nethug of the natives of New Hebrides (*Peale*).

H. similis *H. sacræ* sed minor, coloribusque omnino saturatioribus.

Hab. in insulis "New Hebrides" dictis.

Adult. Crown of head bright green, shaded with cobalt; a broad line from the base of the bill encircling the head, cinnamon; ear-coverts and a narrow line extending round the neck black washed with green; upper part of the back and scapulars dull greenish; wing-coverts and back blueish-green, shading into bright cobalt; quills black, externally washed with blueish-green; tail blueish-green above, black beneath; a collar round the neck and entire under-surface of the body white; bill black, yellowish at the base of the lower mandible; feet olive-brown. Total length 8·9 inches, of bill from front 1·7, from gape 2·0, wing 4·1, tail 2·9, tarsus 0·55.

Young. Similar to the adult, but more dingily coloured; superciliary cincture and back of neck deep cinnamon; forehead also tinged with cinnamon; ear-coverts jet-black; wing-coverts greenish-blue edged with cinnamon; flanks tinged with fulvous; feathers of breast and back of neck edged with narrow brown markings.

Hab. New Hebrides (*mus. Brit. et Lugd.*).

This species is a dull-coloured representative of *H. sacra*, and doubtless goes through all the stages of plumage which that bird is known to assume.

My descriptions and figures are from specimens in the British Museum.

HALCYON CHLORIS.

HALCYON CHLORIS.

(WHITE-COLLARED KINGFISHER.)

Martin-pêcheur à tête verte du Cap de Bonne Esperance	Buff. Pl. Enl. 783.
Martin-pêcheur a collier blanc des Philippines . .	Sonn. Voy. N. Guin. p. 67, t. 33 (1766).
Alcedo chloris	Bodd. Tabl. Pl. Enl. p. 49 (1783, *ex Buff.*).
Halcyon chloris	Gray, Gen. of B. I, p. 79 (1846).
Todirhamphus chloris	Cass. Cat. Halc. Phil. Mus. p. 10 (1852).
Sauropatis chloris	Cab. & Heine, Mus. Hein. th. II, p. 160 (1860).
Dacelo chloris	Schl. Mus. Pays Bas, *Alced.* p. 32 (1863).
Alcedo sacra, var. e.	Gm. Syst. Nat. I, p. 453 (1788, *ex Sonn.*).
Alcedo sacra, var. j.	Bonn. et Vieill. Enc. Meth. I, p. 295 (1823).
Alcedo chlorocephala	Gm. Syst. Nat. I, p. 454 (1788, *ex Buff.*).
Dacelo chlorocephala	Less. Traitè d'Orn. p. 246 (1831).
Halcyon chlorocephala	Sw. Classif. of B. II, p. 335 (1837); Hartl. Ibis, 1859, p. 339.
Todirhamphus chlorocephalus	Bonap. Consp. Gen. Av. I, p. 156 (1850).
Halcyon collaris	Sw. Zool. Illustr. I, pl. 27 (1820).
Todirhamphus collaris	Bonap. Consp. Gen. Av. I, p. 156 (1850).
Todirhamphus occipitalis	Blyth, J. A. S. B. XV, pp. 23, 369 (1846).
Ceryle abyssinica	Licht. Nomencl. Av. p. 67 (1854).
Halcyon abyssinica	Pelz. Sitz. Acad. Wien, 1856, p. 500; id. Voy. Nov. Vög. p. 46 (1865).

H. rostro nigro, versus basin mandibulæ flavicanti: pileo et dorso toto cyaneo-viridibus: maculâ nuchali alba: torque collari albo: subtus alba.

Hab. in parte septentrionali regionis Æthiopicæ orientalis, in tota regione Indica usque ad sub-regionem Austro-Malayanam.

Additional references.—*Halcyon chloris*, Motl. & Dillw. Nat. Hist. of Lab. p. 12 (1855). *Todirhamphus chloris*, Cass. U. S. Expl. Exp. p. 203 (1858); Pelz. Vov. Nov. Vög. p. 44 (1855); Finsch & Hartl. Orn. Centr. Polyn. p. 35, note (1867); Gray, Handl. of B. I, p. 92 (1869). *Dacelo chloris*, Schl. Vög. Ned. Ind. *Alced.* pp. 26, 58, pl. 10 (1864); Finsch, Neu Guinea, p. 16 (1865); Heugl. Orn. N. O. Afr. p. 194 (1869). *Todirhamphus chlorocephalus*, Reich. Handb. *Alced.* p. 31, t. ccccxvii, fig. 3128, et t. ccccliii b. fig. 3390 (1851); Blyth, Ibis, 1859, p. 465; Bernst. J. f. O. 1859, p. 189. *Halcyon collaris*, Gray, Gen. of B. I, p. 79 (1846); id. Cat. Fiss. Brit. Mus. p. 56 (1848); Horsf. & Moore, Cat. B. Mus. E. I. Co. I, p. 127 (1854); Gray, P. Z. S. 1858, p. 171, et Cat. B. N. Guin. p. 19 (1859); Gould, P. Z. S. 1859, p. 151; Gray, P. Z. S. 1860, p. 346, et 1861, p. 433; Scl. P. Z. S. 1863, p. 213; Wall, P. Z. S. 1863, pp. 23, 484. *Todirhamphus collaris*, Blyth, Cat. B. Mus. As. Soc. Beng. p. 48 (1849); Reich. Handb. *Alced.* I, p. 30, t. ccccxvii, fig. 3129 (1851); Moore, P. Z. S. 1854, p. 269; Wall, P. Z. S. 1862, p. 338; Jerd. B. of Ind. I, p. 228 (1862); Wald. P. Z. S. 1866, p. 554; Beav. Ibis, 1866, p. 221, et 1867, p. 409, et 1869, p. 319. *Todirhamphus occipitalis*, Cass. U. S. Expl. Exp. p. 205, pl. XIX (1858).

Adult. Above bright greenish-blue, more decidedly greenish on the back and scapulars; wing-coverts bright blue, deeper on the greater coverts; quills black, edged externally with rich blue; lower part of the back bright blue; tail blue above, black beneath, in certain lights obscurely verniculated, as also are the scapulars; lores white; an occipital patch and a collar encircling the neck white; ear-coverts and a line of feathers encircling the nape greenish black; entire under surface white; bill black, yellowish at the base of the under mandible; feet olive-brown. Total length 9·5 inches, of bill from front 1·8, from gape 2·1, wing 4·3, tail 2·6, tarsus 0·6, middle toe 0·8, hind toe 0·3.

Young. Similar to the adult, but duller in plumage, and the underside, which is profusely barred with narrow transverse edgings to the feathers, more tinged with buff; the upper part of the back dull green and darker beneath the white collar, where it appears black; wing-coverts edged with fulvous.

Hab. Coast of the Red Sea (*Heuglin, Jesse*), India, common in the Bengal Sunderbuns, extending into Aracan and Tenasserim (*Jerdon*), Siam (*Schomburgk*), Cochin China (*Verreaux*), Penang (*Cantor*), Andaman Islands (*Beavan*), Nicobar Islands (*Blyth*), Sumatra (*Wallace*), Java (*Wallace, Bernstein*), Bangka (*mus. Lugd.*), Philippine Islands (*Cuming*), Labuan (*Motley*), Borneo (*Schwaner*), Lombock (*Wallace*), Flores (*Wallace*), Solor (*Wallace*), Timor (*Wallace, Müller*), Celebes (*Fraser*), Gilolo (*Wallace, Bernstein*), Batchian (*Wallace, Bernstein*), Morty Island (*Bernstein*), Ternate (*Bernstein*), Amboina (*Müller*), Ceram (*Forsten*), Banda (*Forsten*), Gagie Island (*Wallace*), Mysol (*Wallace*), Aru Islands (*Wallace*), Goram (*Wallace*), New Guinea (*Müller*), Solomon Islands (*Sclater*).

Very great variation in the shades of green and blue is observable in this species, for which I am unable to account as a sexual difference, as the females do not appear to be less brightly coloured than the males. I believe, therefore, that the brilliancy of plumage depends on the age of the bird, the green tints predominating in the more adult. I must observe, however, that birds from Indo-Malayana have the plumage very brilliant blue; Mr. Gould has a specimen from Siam, agreeing with another in my collection from Penang in being smaller and having a shorter wing than in ordinary *H. chloris*. The latter specimen has rich buff flanks, and what is more curious still, seems from the vermiculations on the back of the neck to be an immature bird. This Siamese and Penang race may ultimately prove to be a distinct species, but it is to be remarked that in the same collection from Penang were two specimens of *H. chloris* identical with specimens from the Moluccas, so that it is impossible to believe in the distinctness of this race I have indicated from the material at present at our service. The bird which Cassin has figured (*l.c.*) as *T. occipitalis* is also represented in my collection from Java and Sumatra. The eye-brow in specimens from these localities is certainly as a rule more distinct than in the birds from other places, but I have one Javan specimen in which the superciliary line is not more developed than in ordinary *H. chloris*, from which, indeed, it would be impossible to distinguish it, so that I think *T. occipitalis* is nothing but a local race. To settle the question, however, it will be necessary to examine specimens from the Nicobar Islands, whence came the typical example, and this I have not yet had the opportunity of doing.

In North Eastern Africa the following is Dr. von Heuglin's experience of this species:—

"The Green Kingfisher is a resident, entirely confined to the coast. It appears to extend its range to the far north in the Red Sea; is, however, common in the southern part and in the Gulf of Aden. Its favourite resorts are the bays and islands with muddy ground and surrounded with quondel and schora bushes. It feeds on fishes and crustacea. It fishes, but not always from overhanging boughs. I have also seen it hunting

grasshoppers. The note is a shrill whistle. It nests in June, sometimes perhaps even in May, in holes in avicenna trees and in the neighbourhood of the tidal line. The young bird has blackish markings on the breast and sides. It certainly does not occur in Abyssinia (*Verreaux*, *Schlegel*). Altogether, I only know this Kingfisher as an inhabitant of the coast, and have never observed it even a few hundred paces from the water, that is on the main-land, over which it travels merely to pass over a tongue of land in the quickest way. Still the bird does visit lagoons in which rain-water has collected."

Mr. Jesse brought home two specimens from the Red Sea Coast, which I agree with Dr. O. Finsch in considering to be identical with the Indian bird. His notes were as follows:—"Procured among the mangrove bushes on the shore of Annesley Bay. At that time they were plentiful, but had disappeared in June. I never saw it elsewhere while in Abyssinia or Bogos. Procured a pair, male and female; the latter, slightly paler in plumage, but moulting, had the appearance of being a younger bird."

Mr. Jerdon in the "Birds of India" makes the following observations:—

"This Kingfisher is by no means uncommon in the Bengal Sunderbuns. It is also found in Arakan and along the Tenasserim Coast, extending into Malayana and the islands. It appears like the others of this genus to prefer the vicinity of the sea, or tidal rivers. A specimen, said to be from Madras, is in the Museum of the late East India Company; but I think it doubtful if it was procured on the Madras Coast. Nothing is recorded of the habits of this bird."

Capt. Beavan has recorded this species from the Andaman Islands, where both he and Colonel Tytler found it to be very common. He adds:—"It frequents the mangrove bushes along the edge of the shore, and is frequently seen to descend to the ground, feed on something there (probably crustacea), and return to its perch after a short interval, apparently never diving into the water after fish like other species."

The following notes of the Vicomte de Bocarmé are given by Professor Schlegel (*l.c.*):—

"This bird perches on the mango-trees, the tamarinds, and even on the leaves of the cocoa-nut trees. His cry resembles that of the Green Woodpecker. He has such a sharp eye that he will perceive, from the height of a lofty tree and at a distance of a hundred paces, an earth-worm of which only a piece an inch long is protruding from the ground; this he seizes and draws the worm gently out of the hole, as if he was afraid of breaking it, and after having eaten it he goes and sits on a stump or a stone. The action of its flight is slow, and contrasts with those of the true Kingfishers. It is common in all the high portions of the island of Java."

Bernstein (J. F. O. 1859, p. 189) says, that "in Western Java, particularly in the neighbourhood of my house, it was the commonest Kingfisher, and might be observed on almost every river or brook. It is generally seen sitting exposed on a branch or stone, watching patiently for a fish or insect, the latter forming its chief food. * * * * When on the wing its clear loud note is repeatedly heard, and sounds like Ka-Keh. I have repeatedly found it nesting near Gadok, in a steep bank of a brook. The nest is generally a plain hole in the earth, covered and protected by an over-hanging stone or bush. A few dry leaves and pieces of moss form the simple nest, on which the three or four white eggs, which are not very glossy, are laid. They are generally much dirtied by the soil, and only show their true colour when washed. Generally they are bluntly rounded at each end, but sometimes longish eggs are found in the nest. They are 30 to 32 millimetres long, by 25 to 26 broad.

In Labuan, says Mr. Motley, "This is a common bird; it frequently perches upon high trees, and is usually met with near the sea-shore." Near Banjermassing the same collector writes, that it particularly "frequents the paddy-fields, and feeds on frogs."

The description and figure are taken from a Gilolo specimen in my collection, obtained from Mr. Wallace.

HALCYON SORDIDA.

HALCYON SORDIDA.

(DULL-GREEN KINGFISHER.)

Halcyon sordidus	Gould, P.Z.S. 1842, p. 72.
Todiramphus sordidus	Bonap. Consp. Gen. Av. I, p. 157 (1850).
Sauropatis sordida	Cab. and Heine, Mus. Hein. th. II, p. 59 (1860).
Halcyon sordida, var.	Gray, P.Z.S. 1858, p. 172, *undè*.
Sauropatis grayi	Cab. and Heine, Mus. Hein. th. II, p. 59 (1860).
Halcyon grayi	Gray, Handl. of B. I, p. 92 (1869).

H. affinis *H. chloridi* sed paullò robustior, coloribus sordidioribus, pileo dorso-que sordidè viridibus.

Hab. in sub-regione Austro-Malayana et in Australiâ septentrionali.

Adult. Head dull blackish green, cheeks, ear-coverts and back of the head black; lores and a collar encircling the neck, white; uppermost portion of the back blackish green; scapulars dull green; wing-coverts dull green, somewhat tinged with blue, the primary coverts being entirely of this colour; quills black, the outer web conspicuously washed with bright blue; lower portion of the back and rump dull cobalt; tail blue above, black beneath; entire under-surface white, tinged with blue on the lower part of the flanks; bill black, the lower mandible yellowish at the base; feet olive-brown. Total length 9·5 inches, of bill from front 2·0, from gape 2 5, wing 4·2, tail 3·0, tarsus 0·55, middle toe 0·9, hind toe, 0·5.

Young. Similar to the adult, but has the breast thickly marked with brown edgings to the feathers, and the upper surface of the body dull brown, especially on the head and scapulars; the white nuchal spot is also a little more distinct.

Hab. Northern Australia (*Gould*); Hope Isles (*mus. Brit.*), New Guinea (*Schlegel*); Aru Islands (*Wallace*).

Mr. G. R. Gray has considered the bird from the Aru Islands to be different from the ordinary Australian form, but I cannot see any real distinctions, and as the New Guinea bird is, according to Professor Schlegel, absolutely identical with Australian specimens, it would be unreasonable to look for a different species in the Aru Islands.

Additional references.—*Halcyon sordida*, Gray, Gen. of B. I, p. 79 (1846); Gould, B. of Austr. II, pl. 23 (1848); id. Intr. B. of Austr. p. 30 (1848); Reich. Vög. Neuholl. p. 209 (1850); Gray, Handl. of B. I, p. 92 (1869). *Todiramphus sordidus*, Reich. Handb. *Alced.* p. 32, t. ccccxix, fig. 3136-37 (1851); Cass. Cat. Hale. Phil. Mus. p. 12 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Cass. U.S. Expl. Exp. p. 212 (1858); Gould, Handb. B. of Austr. I. p. 132 (1865.)

Mr. E. P. Ramsay writes to me as follows :—

"This bird is extremely rare in our collections, chiefly, I believe, from being mistaken for the common species. I have only seen two skins which are said to have been obtained at Moreton Bay. Its habits are doubtless the same as those of *H. sanctus*, but the eggs will probably turn out to be somewhat larger."

Mr. Gould in his "Hand-book" observes:—

"This fine Kingfisher, the largest of the genus *Todiramphus* inhabiting Australia, is rather plentifully dispersed over the north-eastern portion of Queensland, or from Moreton Bay to Cape York. Its discovery is due to the late Mr. Bynoe, R.N., who obtained two examples on the North Coast, but the exact locality is unknown to me."

The front figure in the plate represents a fine specimen from Moreton Bay, given me by Mr. Gould, while the hinder figure is taken from a young bird procured by Mr. Wallace in the Aru Islands. The descriptions are from the same birds.

HALCYON FORSTENI

HALCYON FORSTENI.

(FORSTEN'S KINGFISHER.)

Halcyon Forsteni . . .	Temm. M.S. in Mus. Lugd. *undé.*
,, ,, . . .	Bonap. Consp. Gen. Av. I, p. 157 (1850).
,, ,, . . .	Gray, Handl. of B. I, p. 93 (1869).
Dacelo Forsteni . . .	Schl. Mus. Pays Bas. *Alced.* p. 37 (1863).
,, ,, . . .	Schl. Vog. Ned. Ind. *Alced.* pp. 29, 60, pl. 11 (1864).

H. affinis *H. chloridi*, sed subtus nigro-viridi maculata.

Hab. in insulâ "Celebes" dictâ.

Head dark green, lighter along the sides and towards the nape ; ear-coverts and nape very deep green, looking almost black; back and scapulars very deep green; wing-coverts green, inclining to blue; quills black, lighter at the base, edged externally with greenish blue; tail greenish blue above, black beneath ; cheeks, a collar round the neck, and entire under surface white, blotched with dark blackish green, not so marked on the throat which is white ; a small loral spot white ; under wing-coverts blue; upper mandible black, lower mandible pale yellow, black towards the tip. Total length 9 inches, of bill from front 1·9, from gape 2·2, wing 4·2, tail 2 6, tarsus 0·4, middle toe 0·75, hind toe 0.3.

Hab. Celebes: Gorontalo (*Forsten*).

Beyond the unique specimen in the Leiden Museum, which was obtained at Gorontalo by Dr. Forsten, I do not know of a single example in any Museum in Europe, and it is one of the greatest desiderata in the family *Alcedinidæ.*

The description, measurements, and figure are from the type specimen in the Leiden Museum.

HALCYON VAGANS.

HALCYON VAGANS.

(NEW ZEALAND KINGFISHER.)

Alcedo sacra, var. D . .	Lath. Syn. Suppl. p. 114.
Alcedo sacra, var. ε . .	Bonn. et Vieill. Enc. Meth. I, p. 295 (1823).
Alcedo vagans	Less. Voy. Coq. I, p. 694 (1826).
Alcedo chlorocephala, var. γ .	Less. Traitè d'Orn. p. 546 (1831).
Halcyon vagans . . .	Gray, Voy. Ereb. & Terror, p. 3, pl. 1 (1844); id. Gen. of B. I, p. 79 (1846); id. Cat. Fiss. Brit. Mus. p. 57 (1848); id. Ibis, 1862, p. 216; Layard, Ibis, 1863, p. 242; Hutton, Ibis, 1867, p. 379; Buller, Essay on Orn. of N. Z. p. 7 (1867); Finsch, Journ. f. Orn. 1867, p. 318; Buller, Trans. N. Z. Inst. I, p. 122 (1869); Hutton, *l.c.* I, p. 160; Potts, *l.c.* II, p. 52 (1870).
Todirhamphus vagans . . .	Bonap. Consp. Gen. Av. I, p. 157 (1851); Reich. Handb. *Alced.* p. 31, t. ccccxix, fig. 3188-89 (1851); Cass. Cat. Halc. Phil. Mus. p. 12 (1852); Bonap. Consp. Vol. Anis. p 9 (1854); Cass. U. S. Expl. Exp. p. 201 (1848).
Dacelo sancta (pt.) . . .	Schl. Cat. Mus. Pays Bas, *Alced.* p. 37 (1863).
Halcyon sanctus . . .	Finsch, Journ. f. Orn. 1870, p. 246.
Alcedo cyanea	Forst. Descr. Anim. p. 76 (1844).

Kotare of the natives of New Zealand (*Potts*).

H. similis *H. sanctæ*, sed major: coloribus sordidioribus.

Hab. in Novâ Zeelandiâ.

Adult. Head dull green, brighter over the eye; lores buff; ear-coverts and the back of the neck black; an occipital patch buffy white; upper part of the back blackish; scapulars dull olive-green; least wing-coverts dull green, rest of the wing-coverts brighter green washed with blue; quills black, externally washed with cobalt; lower portion of the back brighter green, inclining to cobalt on the upper tail-coverts; tail black, clearly washed with blue above; sides and back of the neck and under-surface of the body buff; bill black; yellowish at the base; feet olive brown. Total length 8·4 inches; of bill from front 19., from gape 2·4; wing 3·85; tail 2·9; tarsus 0.5.

Young. Similar to the adult but has the colours everywhere duller, and the hinder neck and breast crossed with narrow brown edgings to the feathers.

Hab. New Zealand (*Haast, Buller, Potts*).

This species I consider to be distinct from *H. sanctus*, which it represents in New Zealand. It is always of a more robust size, and has the colours much less bright. Professor Schlegel and Dr. Finsch, however, unite it to the before-mentioned bird.

Until a recent period we knew little about the habits of the New Zealand Kingfisher. Layard (*l.c.*) says that it is "common throughout the Northern Island; it fishes equally in salt and fresh water, and devours also grasshoppers and *Gryllæ* of all kinds, caterpillars, moths, and butterflies." Capt. Hutton, writing from Epsom, in the Province of Auckland, on the 11th of January, 1867, observes:—"In the winter the Kingfisher lives about the town, and often eats insects in the fields: the first bird I saw on landing was one in the barrack square; now they are all by the river, breeding." The last-named Naturalist obtained it on Great Barrier Island, and Dr. Haast also procured it on Bank's Peninsula. The above-mentioned notices comprise, I believe, all that was known concerning the present species up to a recent date.

We are, however, indebted to Mr. T. H. Potts for a very complete account of its nesting-habits (*l.c.*):—

"One of our burrowing species. The tunnel-like hole which forms the approach to its nest is found sometimes in a bank, and perhaps quite as often in a tree. On examining one of these holes in a bank not far from the sea-beach, the floor or bottom was observed to incline slightly upwards from the entrance; the eggs, deposited on the remains of crustacea, being not more than one foot back from the outside of the hole. When a tree has been selected for its house, we have been led sometimes to the discovery by observing the quantity of chips lying beneath; its powerful bill soon excavates a nesting-place in the partially-decayed wood. The situation varies from a few feet to above thirty feet from the ground. The eggs are pure glossy white, delicate and very beautiful, more fragile, perhaps, than those of most other species, oval in shape, with a length of 1 inch ½ line by a breadth of 10½ lines. After hatching, the nest is carefully cleared of the broken shells. The young remain in the nest till well fledged and apparently almost full-grown. On examining the castings of the Kingfisher, which are often to be met with in abundance near a nest containing young, we have observed that the external wing-cases of *Coleoptera* have formed one of the principal ingredients of the pellets. We have noted that a nest from which the young emerged late in November, again contained eggs in January. Our *Halcyon* must lay a much smaller number of eggs than the English Kingfisher. Although this bird may be constantly seen occupying some prominent branch or stake when watching for its prey (which, by the way, is of a very miscellaneous character), yet, when approaching or leaving its nest, it always, where possible, seeks the screen of overhanging trees as it swiftly darts through the gully, permitting but a glance of its bright showy feathers. Should any one approach too close to the neighbourhood of its breeding-hole, the parent bird utters a low cry, like *cree-cree-cree*, frequently repeated. Our bird is much more sociable than its European relative, which is so remarkable for its solitary habits that it has been stated that the male and female only associate together at the breeding season. We have counted as many as eight of our Kingfisher sitting together, and after a heavy rain we have observed on our lawn several of the croquet-hoops occupied at one time by these striking-looking birds. It is rarely to be seen on the ground; after darting down, either in the water or on land, and securing its booty, it immediately flies with it to some perch or post of vantage and prepares it for deglutition by administering some smart blows with its bill, the sound of which may often be distinctly heard. During the breeding-season it indulges in a monotonous call of *chirup, chirup, chirup*, then a pause—the call and pause alternating for a considerable time. Fish, crustacea, young birds, mice, coleoptera, bees, and other insects, furnish some portion of the food-supply of the Kingfisher; we have often noticed its rapid dart at a brood of young chickens. This bird is one of those fortunate species whose numbers seem rather to increase than diminish at the approach of civilization."

The description of the adult is taken from the oldest specimen I could find in the British Museum, that of the young bird being from one of Dr. Haast's specimens given me by Dr. Finsch. The plate is drawn from the same birds.

HALCYON SANCTA.

HALCYON SANCTUS.

(SACRED KINGFISHER.)

Sacred Kingfisher . .	Philipps, Bot. Bay, p. 156; White, Voy. N. S. W. p. 193, pl. 17 (1790).
Alcedo sacra, var. . .	Shaw, Gen. Zool. VIII, p. 78 (1811).
Halcyon sacra . . .	Steph. Gen. Zool. XIII, p. 98 (1825); Jard. and Selby, Ill. of Orn. II, pl. 96, 97 (*nec. Gm.*).
Dacelo chlorocephala, var. b. .	Less. Traité d'Orn. p. 246 (1831).
Halcyon sanctus . . .	Vig. & Horsf. Trans. Linn. Soc. XV, p. 206 (1826, *descr. orig.*).
Todirhamphus sanctus . .	Bonap. Consp. Gen. Av. I, p. 156 (1850).
Sauropatis sancta . . .	Cab. & Heine, Mus. Hein. th. II, p. 158 (1860).
Dacelo sancta . . .	Schl. Mus. Pays Bas, *Alced.* p. 35 (1863).
Halcyon collaris (err.) . .	Vig. & Horsf. Trans. Linn. Soc. XV, p. 206 (1826); Gould, Syn. B. of Austr. III, plate (1838).
Todirhamphus australasiæ .	Cass. Cat. Halc. Phil. Mus. p. 12 (1852, *nec Vieill.*).

H. affinis *H. chloridi* sed multo minor et subtus lætè fulva.

Hab. in insulis subregionis Indo-Malayanæ et in tota subregione Austro-Malayanâ.

Adult Male. Head dull blueish-green, a cincture of bright cobalt from the eye encircling the head, which has the eyebrow and an occipital patch buffy white; ear-coverts and a band encircling the nape black, slightly tinged with green; lores, sides and back of the neck, forming a broad collar, pale buff; upper part of the back and scapulars green; wing-coverts and lower portion of the back bright blue; quills black, fulvous on the inner web, the outer web, especially of the secondaries, edged with bright blue; tail blue above, greyish-black beneath; throat white; rest of the under surface of the body rich buff, deeper on the flanks, with a patch of brown feathers on each side of the upper part of the breast; bill black, yellowish at the base of the lower mandible; feet dusky-olive (*Wallace*). Total length 8 inches, of bill from front 1·6, from gape 1·9, wing 3·7, tail 2·3, tarsus 0·4, middle toe 0·7, hind toe 0·3.

Additional references.—*Halcyon sanctus*, Gould, Syn. B. of Austr. III, pl. (1838); Gray, Gen. of B. I, p. 79 (1846); Gould, B. of Austr. II, pl. 21 (1848); id. Intr. to B. of Austr. p. 30 (1848); Gray, Cat. Fiss. Brit. Mus. p. 56 (1848); Reich. Vög. Neuholl. p. 33 (1850), Bonap. Consp. Vol. Anis. p. 10 (1854); Elsey, P. Z. S. 1857, p. 25; Gray, P. Z. S. 1858, p. 172, et 1859, pp. 154, 160; id. Cat. B. N. Guin. p. 20 (1859); id. Cat. B. Trop. Isl. Pacif. Oc. p. 6 (1859); id. P. Z. S. 1860, p. 346, et 1861, p. 433; id. Ibis, 1862, p. 216; Hartl. & Finsch, P. Z. S. 1868, pp. 110, 118; Scl. P. Z. S. 1869, p. 119; Diggles, Orn. of Austr. pt. 2 (1869); Gray, Handl. of B. I, p. 92 (1869). *Todirhamphus sanctus*, Reich. Handb. *Alced* p. 33, t. ccccxviii, fig. 3131-33; Cass. U. S. Expl. Exp. p. 214 (1858); Wall. P. Z. S. 1862, p. 338, et 1863, pp. 23, 484; Gould, Handb. B. of Austr. I, p. 128 (1865); Rams. Ibis, 1866, p. 327. *Dacelo sancta*, Schl. Vög. Ned. Ind. *Alced.* pp. 27, 59, pl. 10 (1864); Finsch, Neu Guinea, p. 161 (1865).

Female. Similar to the male, but duller in plumage.

Young. General colouration as in the old birds, but very much paler and duller; forehead distinctly marked with buff; wing-coverts edged with fulvous; under surface of the body barred with brown, each feather being edged with this colour; bill black, white at the tip, dirty yellow at the base.

Hab. Australia generally (*Gould*, *Ramsay*), Norfold Island (*G. R. Gray*), New Caledonia (*mus. R. B. S.*), Loyalty Islands (*mus. Brit.*), Pelew Islands (*Semper*), New Guinea (*Müller*), Salawati (*von Rosenberg*), Aru Islands (*Wallace*), Goram (*Wallace*), Ceram (*Wallace*), Amboina (*Forsten*), Waigiou (*Wallace*), Gilolo (*Wallace*, *Bernstein*), Ternate (*Bernstein*), Bouru (*Wallace*), Sula Islands (*Wallace*), Borneo (*Müller*), Lombock (*Wallace*), Java (*W. T. Fraser; mus. R. B. S.*).

Mr. George Robert Gray has given New Hebrides and the Solomon Islands as localities where the Sacred Kingfisher occurs, but as there are no specimens in the British Museum from these places I agree with Mr. Sclater in considering them not thoroughly authentic, and I must wait for further information before including them in my list of habitats.

Mr. Gould gives the range of the present species in Australia in the following words :—

"The Sacred Kingfisher is very generally dispersed over the Australian continent. I have specimens from nearly every locality; those from Port Essington in the north are precisely identical with those of the south coast; on the other hand, those inhabiting Western Australia are a trifle larger in all their measurements, but otherwise present no differences of sufficient importance to warrant their being considered as distinct. It does not inhabit Tasmania."

Specimens are in my collection from New Caledonia and from most of the islands of the Malay Archipelago, where it is generally distributed, ranging as far north as Borneo and Java, from which latter island my friend Mr. W. T. Fraser has forwarded examples to me.

The following extracts from Mr. Gould's "Handbook" give a good account of its habits :—

"The gaiety of its plumage renders it a conspicious object in the bush; its loud piercing call, also, often betrays its presence, particularly during the season of incubation, when the bird becomes more clamorous as the tree in which its eggs are deposited is approached by the intruder. The note most frequently uttered is a loud *pee-pee*, continued at times to a great length, resembling a cry of distress. It sits very upright, generally perching on a small dead branch for hours together, merely flying down to capture its prey, and in most instances returning again to the site it has just left. Its food is of a very mixed character, and varies with the nature of the localities it inhabits. It greedily devours mantes, grasshoppers, caterpillars, lizards and very small snakes, all of which are swallowed whole, the latter being killed by beating their heads against a stone or other hard substance, after the manner of the Common Kingfisher. Specimens killed in the neighbourhood of salt marshes had their stomachs literally crammed with crabs and other crustaceous animals, while intent on the capture of which it may be observed sitting silently on the low mangrove bushes skirting the pools which every receding tide leaves either dry or with a surface of wet mud upon which crabs are to be found in abundance. I have never seen it plunge into the water after fish like the true Kingfishers, and I believe it never resorts to that mode of obtaining its prey. On the banks of the Hunter its most favourite food is the larvæ of a species of ant which it procures by excavating holes in the nests of this insect, which are constructed around the holes and dead branches of the *eucalypti*, and which resemble excrescences of the tree itself. The season of nidification commences in October and lasts till December, the hollow spouts of the gum and holes of the apple-tree (*angophoræ*) being generally selected as a receptacle for the eggs, which are four or five in number, of a pinky-white, one inch and a line in length, and ten lines in dameter."

For the following interesting particulars I am indebted to my friend Mr. E. P. Ramsay, of Dobroyde, N.S.W., who is so well-known as an accurate and keen observer of the habits of Australian birds:—

"This the 'Common Kingfisher' in the neighbourhood of Sydney, is universally dispersed over the whole Continent of Australia. Specimens from New South Wales seem to be the largest, and those from the mangrove swamps of Port Denison the smallest variety. In some of the New South Wales specimens the tint on the back takes a greenish shade instead of blue, and the breast is more or less marked with brown becoming pure white or buff in some of the adults. This bird is not migratory, although many more are seen during the breeding season than in the winter. They usually select the arboreal nest of the White Ants, wherein, after digging a tunnel to the length of 12 or 18 inches, they excavate a chamber large enough to turn round in, and on the debris at the bottom lay four or five white glossy eggs, 1·05 inches in length by ·85 inches in breadth. Some lazy individuals prefer the hollow branches of trees to the trouble of tunnelling in the ants' nests, while the more energetic prefer the bank of a creek or waterhole, where in the soft earth they dig out a house for their young. Although this bird shows no preference for the vicinity of water, being equally numerous in the driest parts of the country, I have noticed them take fish after the manner of the true *Alcyone*. One has lately taken up his abode in the willow-trees which overhang a large dam in the Dobroyde Gardens, where he spends his time catching insects from the surface of the water and occasionally a stray fish or two. These birds return year after year to the same places to breed and occupy the same holes."

The foremost figure in the plate is drawn from an Australian specimen in my collection, and from this the description is likewise taken. The hindermost figure represents a very deeply coloured specimen from Java, sent to me by Mr. Fraser.

HALCYON FUNEBRIS.

HALCYON FUNEBRIS.

(SAD-COLOURED KINGFISHER.)

Halcyon funebris	Forsten, MS. in Mus. Lugd. *undé*
Todirhamphus funebris	Bonap. Consp. Gen. Av. I, p. 151 (1860).
Dacelo funebris	Schl. Mus. Pays Bas, *Alced.* p. 40 (1863).

H. rostro nigro, mandibula versus basin fulvescenti: dorso postico et uropygio viridibus: pileo et dorso summo nigricanti-brunneis: cinctu capitali albo, viridi-cyaneo tincto.

Hab. in insulâ "Gilolo" dictâ.

Head deep black; lores and a band encircling the head white, washed with a distinct sea-green lustre; ear-coverts and a collar round the back of the neck deep black; cheeks and sides of the neck extending backwards and forming a nuchal collar white, slightly tinged with buff; upper surface of the body dull brown, slightly washed with green on the wing-coverts, primaries and tail-feathers; lower portion of the back and rump dull green; entire under surface of the body white, with a large brown patch on each side of the upper part of the breast, and the flanks also marked with brown; bill black, yellowish brown on the under mandible; feet blackish; iris dull olive. Total length 10 inches, of bill from front 1·9, from gape 2·4, wing 4·4, tail 3·1, tarsus 0·5, middle toe 0·9, hind toe 0·45.

Hab. Gilolo (*Wallace*).

Prince Bonaparte, who published the name of this species for the first time, gave "Celebes" as its habitat, but this has since been shown to be erroneous, and there can be no doubt that the range of the Sad-Coloured Kingfisher is limited to the island of Gilolo.

Nothing has as yet been recorded of its habits.

My description and figure are taken from a specimen in my collection obtained in Gilolo by Mr. Wallace.

TODIRAMPHUS VENERATUS.

TODIRHAMPHUS VENERATUS.

(SOCIETY ISLANDS' KINGFISHER.)

Venerated Kingfisher	Lath. Gen. Syn. I, p. 623 (1772).
Alcedo venerata	Gm. Syst. Nat. I, p. 453 (1788, *ex Lath.*); Lath. Ind. Orn. I, p. 251 (1790).
Todirhamphus divinus	Less. Voy. Coq. I, p. 687 (1826); id. Mem. Soc. d'Hist. Nat. III, p. 419, pl. 12 (1827); id. Man. d'Orn. p. 101 (1828); id. Traité d'Orn. p. 250 (1831); Cass. Cat. Halc. Phil. Mus. p. 12 (1852); id. U. S. Expl. Exp. pp. 199, 217, pl. xviii (1858).
Halcyon venerata	Gray, Gen. of B. I, p. 79 (1846); Pelz. Sitz. Akad. Wien. xx, p. 503 (1856); id. Reis. der Novara, p. 47 (1865); Finsch & Hartl. Faun. Centr. Polyn. p. 43 (1867).
Halcyon tuta	Gray, Gen. of B. I. p. 79 (1846).
Alcedo collaris	Forst. Descr. Anim. p. 162 (1844).
Dacelo nullitorquis	Peale, U. S. Expl. Exp. p. 155, pl. 42, fig. 1 (1848); Hartl. Archiv. f. Naturg. p. 110 (1852).
Halcyon tutu (err)	Gray, Cat. Fiss. Brit. Mus. p. 58 (1848).
Todirhamphus venerata	Reich. Handb. *Alced.* p. 33 (1851).
Todirhamphus divina	Reich. Handb. *Alced.* p. 34 (1851).
Halcyon venerata	Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 6 (1859).
Halcyon sacra, pt.	Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 6 (1859).
Coporhamphus veneratus	Cab. Mus. Hein. II, p. 160 (1860).

Erooro and *Buru* of the Natives of Otaheite (*Forsten, Zelebor*).

T. suprà viridis, sub certa luce brunnescens : torque nuchali nullo.

Hab. in Oceaniâ.

Adult. Upper surface green, inclining to verdigris, especially above the eye, where there is a distinct superciliary stripe of this latter colour; lores, cheeks and sides of the neck white, tinged with rust-colour; quills and tail blackish, washed with bluish-green; entire under surface of the body white, with a very distinct tinge of rust-colour on the upper part of the breast; bill black, yellowish at the base of the lower mandible; feet black, with a reddish tinge. Total length 7·5 inches, of bill from front 1·3, from gape 1·6, wing 3·8, tail 3·7, tarsus 0·6, middle toe 0·6, hind toe 0·35.

Young. Similar to the adult, but the colours more tinged with brown on the upper surface; the breast crossed by an irregular band of brown feathers varied with white.

Another specimen, apparently a still younger bird, is dull brown above, with a tinge of green on the sides and back of the head and with a bronzy gloss on the crown; the wing-coverts narrowly edged with yellowish brown, and the band across the breast very distinct and not varied with white.

Hab. Society Islands: Otaheite (*Forster*), Huaheine (*Forster*), Raiatea (*Forster*), Otaha (*Forster*), Borabora (*Lesson*).

Drs. Finsch and Hartlaub consider the *Alcedo tuta* of Gmelin (ex Latham's "Respected Kingfisher") to be the same as this species, but I think in this they are not quite correct, for I believe that the bird I have described as *Todirhamphus tutus* is really Latham's species.

As with the other allied Kingfishers, the utmost confusion exists as to the true habitat of the present bird. Latham gives the locality whence his specimens were obtained as "Apye," in the Society Islands. This place is not mentioned on any of the maps I have examined, unless Hapai in the Friendly Islands is intended. Again the Vienna Museum possesses a specimen marked as coming from New Caledonia, given to the Novara Expedition by Dr. Deplanche, a resident in Papeete, a town of Otaheite. Some mistake has probably occurred, for I much doubt if the species is ever found in New Caledonia, and in this M. Jules Verreaux, who has perhaps examined more birds from this locality than any living Ornithologist, tells me that he has never heard of its being met with there.

I believe, therefore, that the present species is confined to the Society Islands, and certainly further reliable information is required before this range can be extended.

Herr Zelebor, the Naturalist accompanying the late Novara Expedition, says that in Otaheite this bird is regarded as sacred by the inhabitants, who call it *Buru*. The note is described by him as follows:—"*Zak-zak-sak-sak-arr-arr.*"

Mr. Peale (*l.c.*), writing of the species observed by him in Otaheite, remarks:—

"In the secluded valleys, the dead silence which generally prevailed was now and then disturbed by the garrulity of a homely bird, the subject of our present description, as it flew from one dead tree to another, where, watching for its prey which consists of insects, it is usually silent."

The descriptions are taken from specimens kindly lent to me from the Vienna Museum by Herr von Pelzeln, the well-known Director of the Imperial Cabinet. I have great pleasure in returning my best thanks to him for sending the specimens to England for description. The same birds are figured in the plate, the third bird being in my own collection.

TODIRAMPHUS RECURVIROSTRIS.

TODIRHAMPHUS RECURVIROSTRIS.

(FLAT-BILLED KINGFISHER.)

Todirhamphus recurvirostris	Lafr. Rev. Zool. 1842, p. 134.
Coporhamphus recurvirostris	Cab. & Heine, Mus. Hein. th. II, p. 160 (1860).
Halcyon recurvirostris	Finsch & Hartl. Faun. Centr. Polyn. p. 41 (1867).
Halcyon platyrostris	Gould, P. Z. S. 1842, p. 72.
Todirhamphus platyrostris	Bonap. Consp. Gen. Av. I, p. 156 (1850).
Dacelo minima	Peale, U. S. Expl. Exp. p. 159, pl. 145 (1848).

Tiacalla, of the Natives of Upolu (*Gräffe*).

T. viridis: torque collari fulvo: subtus fulvus.

Hab. in insulis "Samoa" dictis maris Pacifici.

Upper surface of the body bright blueish-green; lores and a very distinct eyebrow white tinged with buff; a nuchal patch of feathers buffy white; a broad collar round the neck buff; quills black, buffy white at the base, externally edged with blueish-green; tail blue above, black beneath; throat white, extending down on to the breast; breast rich buff; bill black, yellow at the base of the under mandible; feet reddish brown. Total length 6·5 inches, of bill from front 1·35, from gape 1·65, wing 3·3, tail 1·5, tarsus 0·4, middle toe 0·6, hind toe 0·25.

Hab. Samoa or Navigator's Islands; Upolu (*Peale*, *Gräffe*).

Mr. Gould and Baron de Lafresnaye both described this species in the year 1842, but the latter gentleman's name has priority by one month. Its range seems to be restricted to the group of the Samoa or Navigator's Islands, having been brought thence recently by Dr. Gräffe, who has been collecting in this locality for Mr. J. César Godeffroy, of Hamburg.

In colour the present species is a diminutive representation of the well-known *Halcyon sanctus*, and like that species appears to vary in the blue and green tints of its plumage according to sex and age. The curious flat bill, however, separates it generically from all the green group of the genus *Halcyon*.

Additional references.—*Todirhamphus recurvirostris*, Reich. Handb. *Alced.* p. 35 (1851); Cass. Cat. Halc. Phil. Mus. p. 11 (1852), et U. S. Expl. Exp. pp. 198, 216, pl. xvii (1858). *Halcyon platyrostris*, Gray, Gen. of B. I, p. 79 (1846); id. Cat. Fiss Brit. Mus. p. 58 (1848); id. Cat. B. Trop. Isl. Pacif. Oc. p. 6 (1859). *Dacelo minima*, Hartl. Archiv. f. Naturg. 1852, p. 111.

The following notice, given by Mr. Peale (*l.c.*), is all that I can discover to have been published on the habits of the Flat-billed Kingfisher:—

"This is the smallest species of the genus observed by the members of the Expedition. It was found at the Island of Upolu, one of the Samoan or Navigator's Group, and there confined itself within the recesses of the forest. In manners it much resembles the Jacamars (*Galbulæ*) of South America, sitting for hours, as they frequently do, to watch for passing prey. It prefers the shady humid woods; there the snap of its bill, while catching insects by darting from its perch, will probably first call the attention of the hunter to it. Like most of its congeners it is noisy, but its notes have nothing but their peculiarity to recommend them. The females are similar to the males in dimensions and appearance, but they are not so deeply coloured, and the blue inclines to a green."

My description and figure are taken from a specimen collected in Upolu by Dr Gräffe, and kindly given to me by Mr. Godeffroy. I must regard the figures given by Cassin (*l.c.*) as rather too highly coloured.

TODIRAMPHUS TUTUS.

TODIRHAMPHUS TUTUS.

(OTAHEITE KINGFISHER.)

Respected Kingfisher	Lath. Gen. Syn. I, p. 624 (1772).
Alcedo tuta	Gm. Syst. Nat. I, p. 453 (1788, *ex Lath.*); Lath. Ind. Orn. I, p. 251 (1790).
Todirhamphus tuta (pt.)	Cass. U. S. Expl. Exp. pp. 192, 206, pl. xv., *fig.* 3 *only* (1858).
Todirhamphus tutus	Sclater, P. Z. S. 1864, p. 9.
Todirhamphus sacer	Less. Voy. Coq. I, p. 686 (1826); id. Mem. Soc. d'Hist. Paris, III, p. 11; id. Man. d'Orn. II, p. 100 (1828); id. Nat. Traitè d'Orn. p. 249 (1831).
Coporhamphus sacer	Cab. & Heine, Mus. Hein. th. II, p. 160 (1860).
Todirhamphus sacra	Reich. Handb. *Alced.* p. 34, t. ccccxxiii, figs. 3148-49 (1851).
Halcyon sacra	Gray, Cat. B. Trop. Isl. Pacif. Oc. p. 6 (1859); id. Handl. of B. I, p. 93.
Dacelo sacra	Schl. Mus. Pays Bas, *Alced.* p. 38 (1863).

Kooto-o-oo of the Natives of Otaheite.

T. collo postico albo: subtus albus.

Hab. in Oceaniâ.

Adult. Head green, forehead white as well as a broad eyebrow extending backwards and encircling the neck; below this another broad line of black washed with green, also encircling the neck; back and sides of the neck white, forming a broad collar; upper surface of the body green tinged with blue, especially on the rump and upper wing-coverts; tail blue above, greyish black beneath; under surface of the body white; bill black, depressed, yellowish at the base of the lower mandible; feet olive brown. Total length 8·0 inches, of bill from front 1·4, from gape 1·8, wing 4·0, tail 2·7, tarsus 0·65, middle toe 0·65, hind toe 0·3.

Young. Head dull green; forehead and superciliary line indicated by a few buffy-white feathers; back and scapulars brown, with a faint lustre of green here and there, the nuchal collar indicated by a few buffy-white feathers; wing-coverts, lower portion of the back and rump greenish blue, broadly margined with fulvous; quills and tail brown, washed with green; under surface of the body dull white, the feathers of the upper part of the breast edged with brown; bill black, yellow at the base of the under mandible; feet olive brown. Total length 8 inches, of bill 1·35, wing 3·9.

Hab. Otaheite (*mus. Brit.*). Marquesas Islands (*mus. Lugd.*).

The confusion which has existed respecting the present species is probably unparalleled in the annals of Ornithological Science, and it will be seen by the list of synonyms given above that since Latham's time the species has not been recognised except by Dr. Sclater (*l.c.*). This is the more curious, as the bird is by no means rare in Museums and always comes from the locality "Otaheite" which was correctly indicated by Latham. In the British Museum there is a good series, but the species having been erroneously identified in the first instance as *Halcyon sacra* (Gm.), of course all conclusions drawn respecting the allied species are erroneous also. Latham's description is so good, mentioning particularly the flat bill, that I am at a loss to understand why, with the most ample material at his disposal, Mr. G. R. Gray should have failed to correctly recognise the bird. But he is not singular in this respect, for in most Museums the present species is called *H. sacra.*

I have carefully avoided giving any synonymy which I cannot certify, and I have restricted the identified localities to the "Society Islands" and the "Marquesas Islands," the authority for the latter habitat being Professor Schlegel, who has specimens from those islands in the Leiden Museum. That the bird occurs there is most probable, though Prof. Schlegel does not give the name of the collector who obtained them.

The young bird of *Todirhamphus tutus* is remarkable, and differs so conspicuously from that of *Todirhamphus veneratus* that it is impossible to confound the two species. On the other hand, I expect that further researches in Otaheite will discover the fact that the present species when very old gets the head pure white, as in old *Halcyon albicilla* and *Halcyon sacra*, but the flat bill will always distinguish it from these two species, and it is also a much smaller bird.

Mr. Wodehouse says, that in Huaheine this Kingfisher is called *Otatare;* "builds its nest in the mountains and is the terror of the little native girls, as he swoops down on their little pet pullets."

To Mr. Gould I am indebted for the loan of the specimens from which the figures and descriptions have been taken. Both old and young birds are in his collection.

CARCINEUTES PULCHELLUS.

CARCINEUTES PULCHELLUS.

(BANDED KINGFISHER.)

Dacelo pulchella . .	Horsf. Linn. Trans. xiii. p. 175 (1822).
Halcyon „ . .	Gray and Mitch. Gen. of Birds, I, p. 79 (c. 1844).
Lacedo „ . .	Reich. Handb. *Alced.* p. 42, t. ccccxxix. fig. 3168-9 (1851).
Carcineutes pulchellus, .	Cab. and Heine, Mus. Hein. th. ii. p. 163 (1860).
Dacelo buccoides . .	Temm. Pl. Col. 586.

C. plumis dorsi nigris, fasciis celatis albis, et thalassino-cœruleo terminatis: caudâ nigrâ, fasciis extus cæruleis intus albis transvittatâ: fronte, genis, regione paroticâ, colloque postico rufis. *Fœm.* toto diversa: suprà nigra, fasciis ochraceis vittata, dorsi, tectricùm alarum et caudæ fasciis latioribus: subtus alba: pectore et hypochondriis nigro transradiolatis.

Hab. in regione Indo-Malayanâ.

Head, nape, back and wing coverts black, each feather banded with white and tipped with shining blue; tail black, banded with blue and white; primaries black, secondaries spotted and tipped with white; forehead, cheeks and a collar below the nape deep chesnut; throat white; upper part of the breast and flanks pale brownish red; centre of abdomen and under wing-coverts lighter; bill deep red; eyes brown olive; feet buffy ochre yellow.

Female, above black broadly banded with ochre; under surface white, with the upper part of the breast and flanks banded with black. Total length 9 inches. Length of bill from front 1.4, from gape 1.8, wing 3.4, tail 2.7, tarsus .4, middle toe .5, hind toe .3.

Hab. Mergui *(Blyth)*, Burmah *(Mason)*, Sumatra *(Mus. Hein.)*, Java *(Horsfield, Wallace)*. Malacca *(Cantor, Wallace)*.

Dr. Horsfield, the original describer, in his "Zoological Researches in Java," says:—"This is an extremely rare and local bird, and I found it once only, in a low range of hills about twenty miles south-east of Samarang, known in the central parts of the island by the name of the hills of Prowoto. Here a single bird was obtained in the forest."

Although numerous specimens have reached Europe from the island of Java since

Additional References.—*D. pulchella*, Horsf. Zool. Res. in Java, pl. (1824): Temm. Pl. Col. 277; Blyth, Cat. Birds Mus. As. Soc. Beng. p. 46 (1849): Moore, P.Z.S. 1854, p. 268: Horsf. and Moore, Cat. Birds Mus. E. I. Co. I. p. 122 (1854); Schl. Mus. Pays Bas, *Alced.* p. 21 (1863); id. Vog. Ned. Ind. *Alced.* pp. 15, 50, pl. v. (1864); *H. pulchella*, Gray, Cat. Fiss. Brit. Mus., p. 52 (1848): Bonap. Cons. Gen. Av. I. p. 154 (1850): Cass. Cat. Halc. Phil. Mus. p. 7 (1852): Pelz. Voy. Nov. Vog. p. 41 (1865).

the date of Dr. Horsfield's memoir, it does not appear to be a very common species there, and Schlegel observes, that "it is very rare in Java and Sumatra."

In my own collection I have a pair which were procured at Indramaijoe, near Cheribon, Java, and Mr. Wallace possesses specimens also from that island. On the Malay Peninsula, however, it seems to be very common. I have several specimens from Malacca, where the bird was also obtained by Dr. Cantor.

Mr. Blyth says (*l. c.*), it has been met with at Mergui, and he informs me that he has received specimens from the Southern Tenasserim provinces.

To my kind friend Mr. Wallace, I am indebted for the following note, as regards its habits:—

"*Carcineutes pulchellus* is found in the thickets near streams, where it seems to feed chiefly on small crabs, which it picks up off the mud. I found it in Malacca and Java."

According to Schlegel, the young, on leaving the nest are similar to the adults, but have the beak brown. The figures in the accompanying plate represent the old male and female, and are taken from specimens in the Leiden Museum.

CARCINEUTES MELANOPS, ♂ & ♂ juv.

CARCINEUTES MELANOPS.

(BLACK-CHEEKED KINGFISHER.)

Dacelo melanops, ...	Temm. Ms. Mus. Lugd.
„ „ . . .	Schl. Mus. Pays Bas, *Alced.* p. 21 (1863).
„ „ . . .	„ Vog. Ned. Ind. *Alced.* pp. 16,51, pl. 5 (1864).
Halcyon melanops, . . .	Bonap. Consp. Gen. Av. I, p. 154 (1850).
„ „ . . .	Cass. Cat. Halc. Phil. Mus. p. 7 (1852).
Lacedo melanops, . . .	Reich. Handb. *Alced.* p. 42 (1851).
Carcineutes melanops . . .	Cab. and Heine, Mus. Hein. th. II, p. 163, note (1860).

C. plumis dorsi nigris, fasciis celatis albis, et thalassino-cœruleo terminatis: caudâ nigrâ, fasciis extus cæruleis intus albis transvittatâ: fronte, genis, regione parotică, colloque postico nigerrimis. *Fem.* adhuc ignota.

Hab. in insulâ "Borneo" dictâ.

Head, nape, back and wing-coverts black, each feather banded with white and tipped with shining blue; tail black, banded with blue and white; primaries black, secondaries spotted and tipped with white; forehead, cheeks and a collar below the nape deep black; throat white; upper part of the breast and flanks pale brownish red; centre of abdomen and under wing-coverts lighter; bill deep red; feet buffy ochre yellow. Total length 7.5 inches, of bill from front 1.2, from gape 1.6, wing 3.2, tail 2.4, tarsus 0.07, middle toe 0.5, hind toe 0.3.

Hab. Borneo (*Mus. Lugd*).

This rare species is apparently almost unrepresented in collections in this country, the only specimen which I have as yet met with being a young male in my own collection, from Borneo. It seems to be entirely confined to the latter island, and is very similar to the Malaccan *C. pulchellus*, but differs from it in having the forehead, cheeks and nuchal collar black instead of rufous. The female is still unknown, but it will doubtless be like that of its Malaccan representative.

The measurements are taken from the specimen in my own collection, while the large figure in the plate is drawn from the adult bird in the Leiden Museum (No. 1 of Schlegel's Cat.), the small figure representing the young bird. The blue on the back of the latter is paler than in the adult, and the beak is brownish with a yellowish streak on the under mandible.

MONACHALCYON MONACHUS.

MONACHALCYON MONACHUS.

(HOODED KINGFISHER.)

Dacelo princeps	Forsten, M.S.
Dacelo cyanocephalus . . .	Forsten, M.S.
Dacelo monachus	Temm. M.S. in Mus. Lugd: Gray Cat. Fiss. Brit.Mus. p. 53 (1848); Blyth, Cat. B. Mus. As. Soc. Beng. p. 46, (1849).
Halcyon monachus	Bonap. Consp. Gen. Av. I, p. 154 (1850 *ex Temm.*); Gray, Gen. of B. I, p. 79 (1846); Cass. Cat. Halc. Phil. Mus. p. 8 (1852); Wall. Ibis, (1862), p. 142.
Paralcyon monachus	Bonap. Consp. Vol. Anis. p. 9 (1854).
Monachalcyon princeps . . .	Reich. Handb. *Alced.* p. 38, t. ccccxxv, fig. 3157 (1851).
Halcyon princeps	Cass. Cat. Halc. Phil. Mus. p. 8 (1852).
Dacelo princeps	Schl. Mus. Pays Bas, *Alced.* p. 24 (1863); id. Vog. Ned. Ind. *Alced* pp. 20, 53, pl. 7. (1864); Gray, Handl. of B. I. p. 89 (1869).

M. suprà olivaceo-viridis: pileo saturatè cyaneo: subtus rufa: gutture albo: torque nuchali rufâ interruptâ.

Hab. in insulâ 'Celebes' dictâ.

Adult. Head deep blue, much brighter on the cheeks and ear-coverts; a chesnut collar round the neck, divided in the centre by the blue of the head which reaches to the green of the back; back dull olive-green, wing-coverts of the same colour, but slightly tinged with dull blue; quills brown, pale rufous at the base, the outer web washed with dull blue; lower part of the back and rump a little brighter green than the rest of the back; tail dull blue above, greyish brown beneath; throat white, rest of the under surface rich sienna; iris dark brown; bill and feet coral-red. Total length 12 inches, of bill from front 2·0, from gape 2·5, wing 5·2, tail 4·3, tarsus 0·7, middle toe, 0·9, hind toe 0·4.

Young Male. Similar to the adult, but has all the colours very much duller, forehead and eyebrow rufous, and the cheeks rufous slightly washed with greenish-blue, the bill dull coral-red, black at the base of the lower mandible. Total length 12·0 inches, of bill from front 1·6, wing 5·2.

Young. Head deep blue; lores and a few feathers round the eye buff; back and wing-coverts umber brown, each feather edged with ochre; quills dull brown, inclining to reddish on the outer web; tail blackish brown; a nuchal collar buff marked with black; throat

buffy white; breast pale buff, banded with heart-shaped lines of black, broader on the sides of the breast and less distinct on the flanks.

Hab. Celebes: Menado (*Forsten, Wallace*); Kema (*Forsten.*)

Of the three M.S. names under which the present bird has been known, it seems best to employ that one under which the first description was issued, and as this was given by Bonaparte, I prefer to use the name of *monacha*, which he assigned to it upon that occasion. Professor Schlegel was the first to recognise that the very different looking bird which forms the left hand figure in my plate, was nothing more than the young of the present species, and this extraordinary difference between the young and old stages of plumage weighed considerably with me in recognsising *Monachalcyon* as a separate genus. As far as I can judge the Hooded Kingfisher is confined to the island of Celebes, where it has been found chiefly in the neighbourhood of Menado. From this locality I have received numerous specimens through the kindness of my friend Mr. W. T. Fraser, who used his kind endeavours with M. Renesse van Duivenbode to procure them from thence.

The British Museum has a specimen received from Leiden many years ago, and said to be from Ternate, and Messrs. Cabanis and Heine give the habitat of "Celebes, Ceram, Ternate," for the present bird. Both these latter localities I believe to be erroneous, all the trustworthy evidence hitherto collected being in favour of its being confined to Celebes, possibly to the immediate vicinity of Menado.

The sexes appear to be similar in the adult bird, but it is some time before the full plumage is attained, at least three distinct phases being gone through before the mature dress is assumed. All of these stages are exhibited in the accompanying plate, the figures of the more adult birds being taken from specimens in my collection from Menado, while the young bird is figured from the so-called "Ternate" specimen in the British Museum.

Mr. Wallace has sent a note informing me that the Hooded Kingfisher is found in dry forest, where it eats coleoptera, gryllæ, &c. In a fresh specimen the bill and feet were coral-red.

My description and measurements as well as the two right hand figures in the plate are taken from specimens in my collection. The young is figured from a bird in the Leiden Museum, but described from a specimen in the British Museum.

CARIDONAX FULGIDUS.

CARIDONAX FULGIDUS.

(BLUE AND WHITE KINGFISHER).

Halcyon fulgidus	. .	Gould, P.Z.S. 1857, p. 65.
„ „	. .	„ Birds of Asia, pl.—(1860).
„ „	. .	Wall. P.Z.S. 1863, p. 484.
Caridonax „	. .	Cab. and Heine, Mus. Hein. th. II. p. 162 (1860).
Dacelo „	. .	Schl. Mus. Pays Bas, *Alced.* p. 24 (1863).
„ *fulgida*	. .	„ Vog. Ned. Ind. *Alced.* pp. 21, 54, pl. 9 (1864).

C. suprà saturate cæruleus: capite toto nigro: uropygio argenteo, cæruleo tincto: subtus albus: hypochondriis et tectricibus subalaribus nigris, his albo mixtis: remigibus brunnescente-nigris: rostro lætissimè corallino: iride brunneâ: pedibus rubris.

Hab. in regione Indo-Malayanâ.

Head, cheeks, flanks, and feathers of the leg, black; back, wing-coverts, and upper surface of the tail, deep blue, more conspicuous on the tail; lower part of the back silvery white, the outer feathers tinged with rich blue; the entire under surface white; wing-feathers and under surface of the tail brownish black; under wing coverts black, mixed with white; bill rich coral-red; eye dark brown; feet red. Total length 12.5. Length of bill from front 1.8, from gape 2.3, wing 5.4, tail 4.5, tarsus .6, middle toe .8, hind toe .4.

Hab. Lombock, Flores (*Wallace*).

The present species has as yet only been met with in the islands of Lombock and Flores, where it was discovered by Mr. Wallace, from whom most of the specimens now in Europe were obtained. It was first described by Mr. Gould at a meeting of the Zoological Society in April 1857, and has since been figured by him in his "Birds of Asia."

Mr. Wallace has very kindly sent me the following note relative to its habits:—

"This beautiful species was found in a few localities in the Island of Lombock, in low woods and thickets, where it feeds on coleopterous insects, and probably also on *Myriapoda*, small crustacea and land shells, darting down from its perch to seize them on the ground, and returning to the same post, just as a Kingfisher seizes a fish."

The figure in the accompanying plate is drawn from a specimen obtained in Lombock by Mr. Wallace, now in the Leiden Museum, and I have taken the description from a very fine bird, which he has kindly lent me out of his own collection.

TANYSIPTERA SYLVIA.

(CINNAMON-BREASTED KINGFISHER.)

Tanysiptera sylvia, ... Gould, P.Z.S. 1850, p. 200.
Dacelo sylvia, ... Schl. Mus. Pays Bas, *Alced.* p. 47 (1863).
Uralcyon sylvia . . . . . Heine, Journ. f. Orn. 1859, p. 406.
Quatawur, of the natives of Cape York Peninsula (*Macgillivray*).

T. maculâ dorsali albâ: subtus cinnamomina.

Hab. in Australiâ septentrionali et in Novâ Guineâ.

Male. Crown of the head rich blue, somewhat brighter on the nape; ear-coverts, sides of the head and upper part of the back, deep black, with a faint tinge of blue on the latter; below this a patch of white feathers; scapularies and wing-coverts bright blue; primaries black, their inner webs light rufous at the base, the outer web (especially of the secondaries) broadly washed with blue; lower portion of the back, rump and upper tail-coverts pure white; two middle feathers pure white, the remainder black edged with blue; entire under surface deep cinnamon; bill and feet coral-red. Total length 12.5 inches, of bill from front 1.3, from gape 1.6, wing 3.7, tail 2.7, middle rectrices 7.5, tarsus 0.45, middle toe 0.6, hind toe 0.3.

Female. Similar to male, but has a shorter tail, and the outer web of the middle rectrix blue for half its length.

Hab. Cape York District of North Australia (*Gould*), New Guinea (*Macgillivray*).

Herr F. Heine has separated this *Tanysiptera* under the proposed new genus *Uralcyon*, because the two elongated rectrices cross each other, and on account of the abnormal shape of the spatulæ at the end of the tail; but I do not consider these characters of sufficient importance to warrant its generic separation from the other *Tanysipteræ*.

Mr. Gould, who first described this very beautiful Kingfisher, has published the following interesting details respecting its habits from the pen of the late Mr. J. Macgillivray:—"This pretty *Tanysiptera* is rather plentiful in the neighbourhood of Cape York, where it frequents the dense bushes, and is especially fond of resorting to the small sunny openings in the woods, attracted probably by the greater abundance of insect-food found in such places than elsewhere: I never saw it on the ground and usually was first made aware of its presence by the glancing of its bright colours as it darted past with a rapid arrow-like flight, and disappeared in an instant among the dense foliage. Its cry, which may be represented

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Additional references.—*Tanysiptera sylvia*, Gould, Birds of Austr. suppl, part. I (1851), Reich. Handb. *Alced.* p. 43, t. ccccvii, fig. 3095-96 (1851), Gray, P.Z.S. 1858, p. 190, id. P.Z.S. 1860, p. 347, id. P.Z.S. 1861, p. 433, Wall, P.Z.S. 1863, p. 24, Ramsay, Ibis, 1865, pp. 325, 326, id. P.Z.S. 1868, p. 383, Diggles, Orn. Austr. pl.

by "*whee-whee-whee*" and "*wheet-wheet-wheet*," is usually uttered while the bird is perched on a bare transverse branch or woody rope-like climber, which it uses as a look-out station, and whence it makes short dashes at any passing insect or small lizard, generally returning to the same spot. It is a shy suspicious bird, and one well calculated to try the patience of the shooter, who may follow it for an hour without getting a shot, unless he has as keen an eye as the native to whom I was indebted for first pointing it out to me. According to the natives, who know it by the name of *Quataawur*, it lays three white eggs in a hole dug by itself, in one of the large ant-hills of red clay which form so remarkable a feature in the neighbourhood, some of them being as much as ten feet in height, with numerous buttresses and pinnacles. I believe that the bird also inhabits New Guinea; for at Redscar Bay, on the south-east side of that great Island, in long. 146° 15′ E., a head strung upon a necklace was procured from the natives."

With regard to its occurrence in New Guinea, I am informed that there are in the Leiden Museum some specimens sent thence by von Rosenberg.

My friend Mr. E. P. Ramsay of Dobroyde, has favoured me with the following note:—

"This is without exception the most beautiful of all our Kingfishers. Its great stronghold is the northern part of Queensland and Cape York, from which latter place I have seen some hundreds of specimens. Every person ornithologically inclined and all curiosity hunters bring skins down to Sydney, but as regards specimens for the cabinet they are worthless, being as unlike birds as skin and feathers can possibly be made; consequently there are few collections even here which contain decent specimens. Like the rest of its family, this species lays five roundish white eggs in a round chamber *near* the end of a tunnel, in the side of a bank or in the hills of the white ants."

"It appears to make annual migrations, arriving in great numbers during a single night. At Cape York they are plentiful from October to January or February, and I have received a single female specimen from Port Denison, the extreme limit of its southern boundary, said to have been shot in the month of October. It is curious, however, that none were seen by my collector at Rockingham Bay during his visit there from November to the end of January. I was greatly disappointed as I expected to get some specimens from that neighbourhood."

"The female differs from the male in having the outer webs of the two central tail-feathers margined with blue to within a quarter of their length from the tip. The upper tail-coverts are also edged with blue and the middle tail-feathers are much shorter in the female than in the male, at least such is the conclusion I have arrived at from a close examination of many specimens. This fact seems not to have been noticed by Mr. Gould in his remarks on the colour and plumage of this species. When Mr. Gould's figure and description was published, Cape York was the only locality the bird was known to inhabit; but on the authority of Macgillivray's journal of the voyage of the "Julia Percy" and from specimens procured by several of my collectors, I can affirm that its habitat ranges from Port Denison all along the coast north and north-west to Essington."

These additional details of the life-history of this elegant Kingfisher will doubtless be welcomed by ornithologists, and I am able to confirm Mr. Ramsay's observations as to the differences in the sexes from an examination of an immense series of specimens lately brought home to this country, collected in the neighbourhood of Somerset, Cape York, by Messrs. Cockerell and Thorpe. The females generally have the tail-feathers much rubbed as if in consequence of the constant friction to which they are subjected in excavating the holes and performing the other duties of incubation. Occasionally the tails of the males are found to be much worn but not so generally as those of the female.

The figure of the bird in Mr. Diggles' "Ornithology of Australia" appears to me too large and bulky; but that of the young bird is of great interest. He gives the following particulars respecting the species:—

"This beautiful Kingfisher is only obtained in the peninsular of Cape York. It is a migratory bird, and makes its appearance at the setting in of the N.W. monsoon, in the month of November, and departs in March to its northern habitat, the Island of New Guinea. It is somewhat plentiful near Port Albany, but, from the shyness of its disposition,

is not easily obtained. It frequents the dense scrubs and brushes, particularly the open spots, and may generally be observed sitting on a creeper or dead branch watching for insects, and uttering its peculiar cry, which is a harsh shrill whistle twice or thrice repeated, resembling the syllables "*wheet-wheet*" at which time it raises its tail perpendicularly with a jerk. Like many other species of Kingfisher, it has the peculiar habit of incubating in the clay-built structures of the white ant, not being very particular whether the same be on a tree or on the ground, but very frequently at the foot of a rotten stump, where these nests often occur. A hole is made completely through from side to side, and a small excavation or hollow in the middle serves for the reception of the eggs, no nest being made. The eggs are three and sometimes four, in number, nearly round, and of a pure white. The newly-fledged young make their appearance early in January, and do not acquire the long tail-feathers until after the first moult."

The description, measurements, and figures are taken from fine specimens procured in Cape York by Messrs. Cockerell and Thorpe.

TANYSIPTERA DORIS.

TANYSIPTERA DORIS.

(MORTY ISLAND KINGFISHER.)

Tanysiptera doris.	Wall. Ibis, 1862, p. 44.
,, ,, ...	Wall. P. Z. S. 1863, p. 24.
,, ,, ...	Sharpe, P. Z. S. 1869, p. 631.
Dacelo sabrina (pt.)	Schl. Mus. Pays Bas, *Alced.* p. 46, (1863); Schl. Vög. Ned. Ind. *Alced.* pp. 37, 65, pl. 14 (1864).

T. maculâ dorsali albâ; subtus alba, scapularibus saturatè ultramarinis; tectricibus supracaudalibus cum rectricibus cæruleo marginatis.

Hab. in insulâ "Morotai" dictâ maris moluccensis.

Adult. Head brilliant cobalt; cheeks, ear-coverts and back of the neck deep blue, more brilliant on the two former; upper part of the back and scapulars deep blue black; a large patch of feathers in the centre of the back pure white; wing-coverts deep black, broadly edged with bright blue, the innermost ones glittering cobalt; quills black, the inner web white at the base, the outer webs washed with dark blue; lower portion of the back and upper tail-coverts white, the latter edged with dark blue; tail-feathers white, the exterior web as well as the tip of the interior are broadly margined with dark blue; the two middle feathers blue for the whole length as far as the spatula, the basal half of the inner web varied with white; entire under surface white; bill sealing-wax red; feet olive-brown. Total length 14 inches, of bill from front 1·3, from gape 1·7, wing 4, tail 4·1, middle rectrices 8·0, tarsus 0·5, middle toe 0·7, hind toe 0·35.

Young. Head blue-black, with a cincture of brilliant cobalt; cheeks, ear-coverts, sides and back of the neck deep blue black; upper surface of the body brown, with a patch of fulvous spots on the upper part of the back, marking the white patch in the adult; wing-coverts brown, narrowly edged with fulvous; quills brown; upper tail-coverts brown, slightly streaked with fulvous; tail blackish brown, glossed with blue, especially on the centre feathers which have also the inner web white; lores and under surface of the body deep fulvous, with irregular markings of black caused by the black margins to the feathers; bill red, mixed with black towards the tip; feet olive-brown.

Hab. Morty Island (*Wallace.*)

This is one of the most beautiful of the *Tanysipteræ*, and is distinguished by the large white patch on the back from most of the species of the genus. It has two near allies, *T. emiliæ* from Raou, which differs in the narrower markings of the tail, and *T. sabrinæ* from Kaioa, which has the upper tail-coverts and tail white.

The description and measurements, as well as the figure of the adult bird in the plate, are taken from a very fine skin in Mr. Wallace's collection. My own specimens average about 12 inches in total length, their tail feathers having apparently not yet attained their maximum growth. The young bird is described and figured from a specimen in my collection, obtained by Mr. Wallace in Morty Island.

TANYSIPTERA EMILIÆ.

TANYSIPTERA EMILIÆ.

(RAOU KINGFISHER.)

T. affinis *T. doridi* sed paullò major: pileo et tectricibus alarum minoribus pulchrè argenteo-cyaneis: caudæ tectricibus albis, augustè nigricanti marginatis: tectricibus albis, augustissimè cyaneo marginatis.

Hab. in insulâ "Raou" dictâ maris moluccensis.

Male. Entire head, which is much crested, and nape beautiful silvery cobalt; cheeks, ear-coverts, back and sides of neck and the upper part of the back, black washed distinctly with cobalt; in the middle of the back a large patch of white feathers; scapulars very deep ultramarine; least wing-coverts very brilliant silvery cobalt, the greater ones black washed with dark ultramarine; quills blackish brown, the inner web grey at the base, the secondaries externally glossed with deep blue; lower part of the back, rump and upper tail-coverts pure white, the latter indistinctly edged with greyish black, here and there tinged with blue; tail feathers pure white margined with blue which is the colour of the narrow shaft to the spatula which is again pure white; entire under-surface pure white, mixed with blue on the under wing-coverts; bill red; feet olive-brown; nails fleshy brown. Total length 14 inches, of bill from front 1·4, from gape 1·9, wing 4·3, tail 4·4, middle rectrices 8·2, tarsus 0·6, middle toe 0·7, hind toe 0·4.

Hab. Raou Island (*Bernstein*).

This species was discovered by Dr. Bernstein in Raou and the only specimens known are in the Leiden Museum. Professor Schlegel is inclined to refer them to *T. doris*, but at the same time he marks the characters wherein the bird from Raou does not agree with that from Morty Island. *T. Emiliæ* is certainly allied to *T. doris*, but differs in the much brighter colour of the head and small wing-coverts, in the distinct cobalt lustre on the cheeks and upper part of the back and in the very much narrower margins to the tail-feathers: the nails also are of a pale flesh-colour, but I do not know if this is a permanent character. Professor Schlegel has figured both this species and *T. doris* (s. n. *T. sabrina*) in his beautiful work on Malayan Kingfishers (Vog. Ned Ind. *Alced.* pl. 14).

I have named this species after my wife, who from the first has taken great interest in the present work, and who, possessing a very good acquaintance with ornithology, has been no mean assistance in its preparation. For the opportunity of figuring the type-specimen I am indebted to my kind friend Professor Schlegel, who lent it to me from the Leiden Museum.

TANYSIPTERA SABRINA.

TANYSIPTERA SABRINA.

(KAIOA KINGFISHER.)

Tanysiptera sabrina . Gray, P. Z. S. 1860, p. 347, pl. 170; Wall. P. Z. S. 1863, p. 24; Schl. Ned. Tijdschr. 1866, p. 272; Gray, Handl. of B. I, p. 90 (1869); Sharpe, P. Z. S. 1869, p. 631.

T. maculâ dorsali alba: subtus alba: scapularibus nigris, ultramarino clarè lavatis: tectricibus supracaudalibus cum rectricibus albis.

Hab. in insula "Kaioa" dictâ.

Head, nape and wing-coverts bright ultramarine; cheeks, ear-coverts and hinder part of the neck, upper part of the back and scapulars black, plainly washed with dark blue; in the centre of the back a small patch of white feathers; wing-feathers black, the extreme basal portion of the inner web white, the exterior web broadly margined with dark blue; lower part of the back, rump and upper tail-coverts pure white; tail-feathers pure white; the two middle feathers white at the base with here and there a narrow blue edging, the narrow portion of the shaft blue, the spatula white; bill sealing-wax red; feet olive-brown. Total length 13·5 inches, of bill from front 1·4, from gape 1·8, wing 4·3, tail 4·3, middle rectrices 7·5, tarsus 0·5, middle toe 0·7, hind toe 0·3.

Hab. Kaioa Island (*Wallace*, *von Rosenberg*).

The description and figure of this fine *Tanysiptera* are taken from a specimen in Mr. Wallace's collection, and as will be seen, this bird possesses a white dorsal spot. Professor Schlegel considers this character of no importance, having, as he relates (*l.c.*) received a series of no less than 16 specimens from Kaioa. He writes:—"A certain number of individuals do not offer the least trace of white on the upper part of the back, in others the white is reduced to a single feather, while in the rest these white patches are spread more or less completely over the back." Every specimen of *T. sabrina* that I have examined in this country has had a distinct dorsal patch, which it appears on examination to assume gradually, and I therefore believe that like *T. doris* some trace of the white spot will be seen in the young bird. Nor is my opinion compromised by the fact, that Professor Schlegel has got specimens of *T. sabrina* without a trace of a dorsal spot, for he very kindly lent me one to figure in the present work, and on careful examination I found that, although the skin looks perfect, the whole of the feathers of the middle of the back have been removed, either by a shot or otherwise. So that at present I consider *T. sabrina* to be a good species and its white dorsal spot to be one of its characteristic peculiarities.

The principal description and figure are from a Kaioa specimen in Mr. Wallace's collection.

TANYSIPTERA NYMPHA.

TANYSIPTERA NYMPHA.

(RED-BREASTED KINGFISHER.)

Tanysiptera nympha, . . .	Gray, Ann. Nat. Hist. 1841, p. 237.
Alcedo nympha, ...	Martens, Journ. f. Orn. 1864, p. 18.
Dacelo dea, pt.	Schl. Mus. Pays Bas, *Alced.* p. 43 (1863).
„ „	Schl. Vog. Ned. Ind. pp. 33, 62 (1864).

T. maculâ dorsali nullâ: uropygio miniato.

Hab. in parte septentrionali-occidentali Novæ Guineæ.

Head rich ultramarine, inclining to cobalt on the nape; ear coverts and upper part of the back and scapularies jet black; lower part of the back, rump, and upper tail-coverts rich vermilion; wing-coverts black, edged with ultramarine; the innermost ones rich cobalt; wing feathers black, the inner web light rufous from the base, the exterior very narrowly washed with blue; tail-feathers deep blue, the interior ones tipped with white, the two middle tail-feathers rich blue, the spatula long and white, with a faint blush of rose; entire under surface rich vermilion, a little paler on the throat and abdomen; bill and feet sealing-wax red; eyes black. Total length 11 inches, of bill from front 1.2, from gape 1.7, wing 3.6, tail 2.8, middle rectrices 0.6, tarsus 0.3, middle toe 0.6, hind toe 0.2.

Hab. Interior of the North-West portion of New Guinea (*Wallace.*)

This beautiful Kingfisher was described in 1841 by Mr. George Robert Gray from a very bad specimen in the British Museum, supposed to be from the Philippine Islands. No other specimen was known till Mr. Wallace re-discovered it in New Guinea and brought home a single skin, thus fixing the true habitat of the species. Mr. von Martens seems to have overlooked this fact in his essay on the Ornithology of the Philippines (*l.c.*) but does not perpetuate the error in the "Zoologische Abtheilung" of the "Prussian Expedition to Eastern Asia."

Mr. Wallace has kindly given me the following information respecting the present bird:—

"This rare species was obtained by my assistant, Mr. Allen, in the interior of the North-West peninsula of New Guinea; and the single specimen he obtained is, I believe, the only complete and authentic one in Europe. New Guinea is the only island which

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Additional references.—*Tanysiptera nympha*, Gray and Mitch. Gen. of Birds I, p. 78 (c. 1844), Gray, Cat. Fiss. Brit. Mus. p. 59 (1848), id. P. Z. S. 1860, p. 347, Bonap. Consp. Gen. Av. I, p. 157 (1850), Wall. P. Z. S. 1862, p. 165, id. P. Z. S. 1863, p. 24, Schl. Ned. Tidschr. 1866, p. 250.

possesses two species of this genus, and may therefore be looked upon as its metropolis, and as more likely than any other part of the world to produce new forms of Kingfishers, connecting this isolated group with the rest of the family"

The figure in the accompanying plate is drawn from Mr. Wallace's specimen, from which I have also taken the description. The measurements of the tail are taken from the type specimen in the British Museum, as in Mr. Wallace's bird the tail-feathers have not attained their full length.

TANYSIPTERA ELLIOTI.

TANYSIPTERA ELLIOTI.

(ELLIOT'S KINGFISHER.)

Tanysiptera ellioti . . . . . Sharpe, P.Z.S. 1869, p. 630.

T. supra saturate ultramarina: capite toto cum tectricibus alarum superioribus lætissime cyaneis: dorso postico cum uropygio et rectricibus omnibus purissime albis: rectricibus duabis mediis haud spatulatis, apice tantum paullo dilatatis: subtus pure alba, tibiis ultramarinis; hypochondriis striis ultramarinis longitudinaliter notatis.

Hab. in insulâ "Mysol" dictâ.

Adult. Head uniform brilliant cobalt; cheeks, ear-coverts, and the whole of the back rich ultramarine; lesser and least coverts brilliant cobalt, the second series bright ultramarine, the cubital and primary coverts ultramarine, uniform with the back; quills entirely black, the outer web broadly washed with deep ultramarine; lower part of the back, rump, and upper tail-coverts pure white; tail-feathers all pure white, the middle ones with no attenuated end and no perceptible spatula, these feathers when observed from a distance and placed on a level with the eye having a faint blue lustre; entire under surface white, thighs ultramarine, and the flanks longitudinally marked with this colour also; bill vermilion; feet olive-brown. Total length 13·5 inches, of bill from front 1·4, from gape 1·7, wing 4·5, tail 4·5, middle rectrices 8·0, tarsus 0·5, middle toe 0·7, hind toe 0·35.

Another specimen is precisely similar to the foregoing, but has the middle tail-feathers marked with blue for about a quarter of their length.

Young. Similar to the adult, but has the wing-coverts somewhat edged with ochre, and some of the quills dull rusty-brown; the upper tail-coverts are broadly edged with blue and tinged with ochre, and the entire under-surface of the body is also tinged with the last named colour, the flanks being marked with brown; the tail also is entirely blue.

Hab Koffiau, Mysol, (*von Rosenberg*)

This elegant species was first described by me from a specimen in Count Turati's Museum, but the exact locality was at that time unknown. On visiting the Leiden

Museum, however, I discovered a series of specimens there from Mysol, and it is to Professor Schlegel's kindness in lending me the examples in question that I am enabled to give a figure of this beautiful *Tanysiptera* in three stages of plumage

In general appearance it resembles *T. galatea*, but differs conspicuously in the unspatulated tail which seems to be preserved in all ages.

The species is dedicated to Mr. D. G. Elliot, one of the most illustrious American Naturalists, and author of several Ornithological "Monographs."

TANYSIPTERA HYDROCHARIS.

TANYSIPTERA HYDROCHARIS.

(ARU ISLAND KINGFISHER.)

Tanysiptera hydrocharis, ... Gray, P.Z.S. 1858, p. 172.
Dacelo hydrocharis, ... Schl. Mus. Pays Bas, *Alced.* p. 46 (1863).

T. maculâ dorsali albâ nullâ: uropygio albo: caudâ spatulatâ: genis, regione paroticâ et collo postico nigris: rectricibus exterioribus nigris, cæruleo marginatis.

Hab. in insulis "Aru" dictis.

Adult. Crown of the head light cobalt, blackish on the forehead and brighter along the sides of the head; cheeks, ear-coverts, and nape black; scapularies, middle of the back, and wing-coverts black, washed with ultramarine, brighter on the latter; wing-feathers black, white at the base, washed with ultramarine on the outer web; rump pure white; tail black, broadly washed with dark blue; middle feathers blue edged with white near the base, and terminating in an elongated white spatula; entire under-surface white; bill coral-red; feet dusky reddish olive; eyes dark-brown. Total length 13·3 inches, of bill from front 1·0, from gape 1·4, wing 3·5, tail 3·3, middle tail-feathers 9·0, tarsus 3·6, middle toe 0·6, hind toe 0·25.

Young. Head blackish-brown; a line of feathers extending from the base of the bill backwards over the eye, pale fulvous brown; back, scapularies, and wing-coverts dark brown, strongly tinged with dark ochre, especially on the rump and wing-coverts, the latter being conspicuously edged with ochre; quills blackish brown, fulvous at the base, the primaries externally edged with whitish-brown, the secondaries with dark ochre, this colour being spread over the whole of the innermost secondary quills; tail ochreous brown, the middle feathers tinged with dull blue; ear-coverts dark brown; cheeks mixed dark brown and ochre; sides of the neck and entire breast ochre margined with blackish brown, the lower part of the abdomen white; throat pure white, with a line of brown feathers running down each side of it; bill dark horn brown, paler on the lower mandible; feet olive brown. Total length 5·3 inches, of bill from front 0 8, wing 3·0, tarsus 3·55.

Hab. Aru Islands (*Wallace, von Rosenberg*).

Additional references.—*Tanysiptera hydrocharis*, Gray, Cat. Mamm. and B. of N. Guin. pp. 20, 55 (1859); *id.* P.Z.S. 1860, p. 347; Cab. and Heine, Mus. Hein. th. II, p. 162 (1860); Gray, P.Z.S. 1861, p. 433; Wall. P.Z.S. 1863, p. 24; Rosenb. Journ. f. Orn. 1864, p. 118; Schl. Ned. Tijdschr. III, pp. 269, 340 (1865); Sharpe, P.Z.S. 1869, p. 631. *Dacelo hydrocharis*, Schl. Vog. Ned. Ind. *Alced.* pp. 36, 65, pl. 15 (1864).

This very elegant Kingfisher appears to be confined to the Aru Islands, where Mr. Wallace first discovered it, and where it has since been obtained by Herr von Rosenberg. It is easily distinguishable by its smaller size from all the other species of *Tanysiptera*.

Mr. Wallace informs me that this bird "eats insects, digging its beak into the ground. It roosts in the holes of rocks by the sides of small streams."

The adult bird figured in the plate is a fine specimen lent me by Mr. Wallace. For the opportunity of figuring the young bird I am again indebted to the kindness of Professor Schlegel, who allowed the specimen to be sent to England along with other valuable Kingfishers from the Leiden Museum.

TANYSIPTERA ACIS.

TANYSIPTERA ACIS.

("ACIS" KINGFISHER.)

Tanysiptera acis . . Wall. P. Z. S. 1863, pp. 23, 24; Schl. Ned. Tijdschr. 1865, p. 273; Sharpe, P. Z. S. 1869, p. 631; Gray, Handl. of B. I. p. 90 (1869).

Dacelo dea (pt.) . . Schl. Mus. Pays Bas, *Alced.* p. 43 (1863); id. Vög. Ned. Ind. pp. 33, 62 (1862).

T. maculâ dorsali nullâ; uropygio albo; candâ distinctè spatulata; genis, regione parotica et collo postico nigris; rectricibus exterioribus albis cæruleo marginatis.

Hab. in insulâ "Bouru" dictâ maris moluccensis.

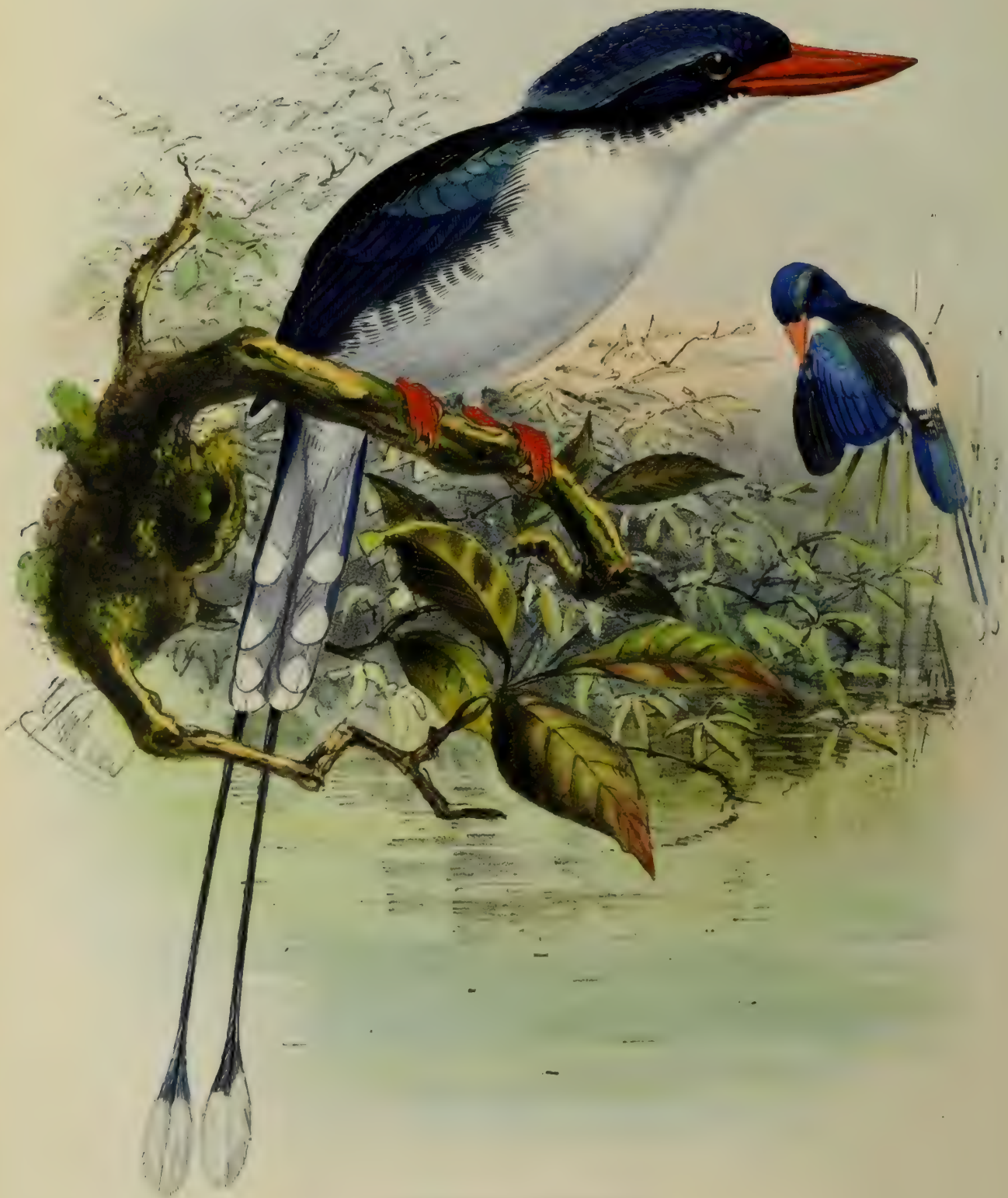
Head dark blue, inclining to cobalt on the nape; cheeks, ear-coverts, hinder portion of the neck, upper part of the back and scapulars deep black, with a faint tinge of blue here and there; lower portion of the back, rump and upper tail-coverts dingy white, each feather broadly margined with black; wing-coverts deep blue, the innermost ones bright cobalt; quills black, the inner web yellowish at the base, the exterior webs slightly tinged with dark blue; tail-feathers white, broadly edged with blue, the middle feathers, with the exception of a few white patches at the base, blue for the whole length as far as the spatula, which is also edged with blue; entire under surface pale fulvous, each feather narrowly edged with black; bill red; feet olive; iris dark brown. Total length 14 inches, of bill from front 1·2, from gape 1·7, wing 4·0, tail 3·7, middle rectrices 8·0, tarsus 0.45, middle toe 0·8, hind toe 0·3.

Hab. Bouru (*Wallace.*)

The above description is taken from the type-specimen in Mr. Wallace's collection, and the plate is drawn from the same bird. At present I believe this specimen to be unique in European Museums, for although Mr. G. R. Gray (*l.c.*) includes it among the Kingfishers in the British Museum I have never seen a specimen there, and the locality given, "Ceram" is of course altogether wrong.

Mr. Wallace's type-specimen is not quite adult, but, when discovered, the mature bird will scarcely differ except in being pure white underneath. The black cheeks and back place it in the same section of the genus as *Tanysiptera hydrocharis*, from which it may very easily be distinguished by its larger size and comparatively shorter tail with more white on it.

Mr. Wallace informs me that the only specimen in his collection was obtaind by him in Bouru, and that it had some "small land-shells in the stomach."



TANYSIPTERA MARGARETHÆ.

TANYSIPTERA MARGARETHÆ.

(BATCHIAN KINGFISHER.)

Tanysiptera margarethæ	Heine, Journ. f. Orn. 1859, p. 406 et 1861, p. 215; Sharpe, P.Z.S. 1869, p. 631.
Tanysiptera isis	Gray, P.Z.S. 1860, p. 347; Wall. P.Z.S. 1863, p. 24; Schl. Ned. Tijdschr. 1865, p. 272.
Dacelo dea (pt.)	Schl. Mus. Pays Bas, *Alced.* p. 43 (1863); id. Vog. Ned. Ind. *Alced.* pp. 33, 62 (1864).
Tanysiptera margaretta	Gray, Handl. of B. I. p. 90 (1869).

T. maculâ dorsali nullâ; uropygio albo; regione paroticâ et collo postico atro-cæruleis: pileo ultramarino, superciliis cum nuchâ cyaneis: tectricibus caudalibus postremis atro-cæruleis.

Hab. in insulis 'Batchian, Gilolo' dictis maris moluccensis.

Crown of the head ultramarine encircled with a line of bright cobalt feathers; forehead black; cheeks, ear-coverts, back and sides of neck, upper part of the back and scapulars deep blue; lower part of the back and rump white; upper tail-coverts white, broadly edged with bright blue; wing-feathers brownish black, the inner web white at the base, the outer web sparingly margined with blue, some of the feathers having a dusky edging; tail-feathers white margined with blue, the two middle feathers blue to half the extent of the spatula, which is elongated, the basal portion of the feathers being marked or irregularly streaked with white. Total length 13 inches, of bill from front 1·3, from gape 1·7, wing 3·6, tail 3·8, middle rectrices 8·0, tarsus 0·5, middle toe 0·7, hind toe 0·3.

Hab. Batchian, Gilolo (*Wallace*).

As Mr. Sclater remarks (P.Z.S. 1860, p. 347), there can be no doubt that Heine's *T. margarethæ* is the same as Mr. Gray's *Tanysiptera isis*. The name adopted is, therefore, the correct one to be employed for this species.

A slight discrepancy will be observed between the measurements given above, which are those of a fine skin from Batchian, and those given by Herr Heine. The latter gentleman does not state the locality of his type specimen, but his description and measurements agree with a specimen in my collection from Gilolo. Birds from this latter island seem to be appreciably larger than those from Batchian.

The description and figure are taken from a beautifully preserved specimen from Batchian lent to me by Mr. Wallace.

TANYSIPTERA NAIS.

TANYSIPTERA NAIS.

(CERAM KINGFISHER.)

Tanysiptera nais . Gray, P. Z. S. 1860, pp. 346, 347; Wall. P. Z. S. 1863, p. 24; Gray, Handl. of B. I, p. 90 (1869); Sharpe, P. Z. S. 1869, p. 631.

Tanysiptera dea (pt.) . Schl. Mus. Pays Bas, *Alced.* p. 43 (1863); id. Vog. Ned. Ind. *Alced.* pp. 33, 62 (1864); id. Ned. Tijdschr. 1866. p. 273.

T. maculâ dorsali albâ nullâ: uropygio albo: cauda spatulata: genis, regione paroticâ et collo postico saturate cæruleis: pileo concolori: tectricibus supracaudalibus omnino albis: dorso cyaneo maculato.

Hab. in insulis "Ceram" "Amboina" dictis.

Adult. Head shining cobalt; cheeks, ear-coverts, sides and back of the neck and upper portion of the back deep blue, distinctly spotted with cobalt on the latter; middle of the back and scapulars deep blue; wing-coverts bright cobalt, the outer ones deep blue; quills black, washed externally with bright blue; lower portion of the back and tail-coverts pure white; tail-feathers white, narrowly edged with blue on the outer web, the two middle feathers very long, white at the base, the rest of the feather blue as far as the spatula which is white; entire under surface white, with a tinge of cream-colour; bill sealing-wax red; feet olive-brown. Total length 16 inches, of bill from front 1·3, from gape 1·9; wing 4·2, tail 4·2, middle rectrices 10·2, tarsus 0·5, middle toe 0·7, hind toe 0·25.

Young. Head deep cobalt, brighter over the eye; cheeks, ear-coverts and back of neck deep blue-black, mottled with blue on the latter as in the adult; back and scapulars dark brown, slightly marked with rufous on the latter; wing-coverts black, more broadly edged with rufous and exhibiting a tinge of blue here and there; quills dark brown slightly washed with blue near the base of the outer web, the secondaries slightly margined with rufous-brown; lower part of the back, rump and upper tail-coverts fulvous-white, broadly margined with blackish; tail-feathers fulvous-white at the base, broadly margined with blackish; middle tail-feathers blueish, broadened slightly towards the apex, white at base of both webs and longitudinally marked with fulvous white near the tip; entire under surface fulvous, becoming white in one or two places, all the feathers margined with blackish, developing into two large black patches on either side of the upper part of the breast; bill dull sealing-wax red; feet olive brown.

Hab. Ceram (*Wallace*), Amboina (*Wallace*).

So far as is at present known this beautiful Kingfisher is confined to the islands of Ceram and Amboina, where it represents *T. galatea*. In size and general coloration it is very similar to the last-named species, but is always to be distinguished by the blue mottling on the upper part of the back.

The description and figure of the adult bird are taken from a very fine specimen in Mr. Wallace's collection from Amboina. The young is described from a Ceram skin in my own collection.

TANYSIPTERA GALATEA.

TANYSIPTERA GALATEA.

("GALATEA" KINGFISHER.)

Tanysiptera galatea .	Gray, P. Z. S. 1859, p. 154; id. P. Z. S. 1860, p. 347; Wall, P. Z. S. 1863, p. 24; Gray, Handl. of B. I. p. 90 (1869); Sharpe, P. Z. S. 1869, p. 631.
Tanysiptera dea . .	Vig. Linn. Trans. XIV, p. 433; Gray, Cat. Mamm. & B. of N. Guin. p. 20 (1859).
Alcedo dea . . .	Less. Voy. Coq. I, p. 697 (1826).
Dacelo dea (pt.) . .	Schl. Mus. Pays Bas, *Alced.* p. 43 (1863); id. Vog. Ned. Ind. *Alced.* pp. 33, 62 (1864); id. Ned. Tidschr. 1866, p. 271.

P. maculâ dorsali nulla: uropygio albo: cauda spatulata: genis, regione parotica et collo postico saturate cæruleis: pileo concolori: tectricibus supracaudalibus omnino albis: dorso concolori.

Hab. in insula "Waigiou" dictâ et in Novâ Guineâ.

Head and nape brilliant ultramarine; cheeks, ear-coverts, sides of the neck, back and scapularies deep blue-black; upper wing-coverts black edged with dark blue, the interior ones bright ultramarine; wing-feathers black, the inner web white at the base, the outer web plentifully washed with dark blue; lower part of the back, rump and upper tail-coverts pure white; tail-feathers white, with a narrow edging of blue on the outer web, the two middle tail-feathers blue as far as the spatula, a white spot or two at the base of the feathers and a very narrow edging of white here and there on the inner web; entire under-surface creamy white; bill sealing-wax red; feet olive-brown. Total length 17 5 inches, of bill from front 1·3, from gape 1·8, wing 4.4, tail 4·9, middle rectrices 11·0, tarsus 0·4, middle toe 0·8, hind toe 0·35.

Hab. Waigiou, New Guinea (*Wallace*).

This is one of the largest species of *Tanysiptera*, and like *T. nais* possesses a very long tail. It may, however, be recognised from that species by its uniform coloured back.

My description, measurements and figure are taken from a beautiful skin in Mr. Wallace's private collection.

TANYSIPTERA RIEDELI.

TANYSIPTERA RIEDELI.

(RIEDEL'S KINGFISHER).

Tanysiptera Riedeli . Verr. Nouv. Archiv. du Mus. Bullet. II, p. 21 t. 3 (1866); Gray, Handl. of B. I, p. 90 (1869); Sharpe, P. Z. S. 1869, p. 631.

T. supra viridi-cyanea: subtus alba: scapularibus indicis: uropygio albo: rostro corallino: pedibus rubro-brunneis.

Hab. forsan in insulâ "Celebes" dictâ.

Head, neck, upper part of the back and wing-coverts greenish cobalt, the bases of the feathers black; sides of the back, scapulars, some of the wing-coverts and quills indigo, clearer on the edges of the feathers; the last-named shade being mingled with the blue on the ear-coverts, as well as on the sides of the neck; the entire under surface from the chin downwards, rump and tail, pure white; the three lateral feathers narrowly bordered with indigo on part of their outer webs; the two middle for a part of their length to within an inch of their base being bordered with greenish blue, and the rest of the feathers of the latter colour as far as the spatula which is white; the shaft is black excepting at the base and near the apex; quills black with a part of their external webs very deep indigo; under wing-coverts black; beak coral-red; tarsus reddish-brown; toes and nails brown.

Hab. Celebes? (*Riedel*).

The above description is translated from the original article by M. Jules Verreaux (*l. c*), for I have never seen a specimen of the bird myself. The figure is taken from a water-colour drawing of the type-specimen executed for me by M. Huet of Paris.

The exact locality of *T. riedeli* is unknown, and I am unwilling to give its habitat as Celebes for certain, as no collector has ever yet met with a species of *Tanysiptera* in that island. On first seeing the description of the bird I at once wrote to M. Riedel, asking him to send me a specimen for the purposes of the present work, and in due time I received an answer from him promising to do all he could for me to procure one, but up to the present date I have not received any examples from him.

T. Riedeli is evidently very nearly allied to *T. Emiliæ* from Raou, but has not the white patch in the middle of the back. It will most likely be found eventually that the present species is an inhabitant of one of the Moluccas, and had been brought to Celebes by some native trader.

DACELO GIGAS.

DACELO GIGAS.

(LAUGHING KINGFISHER.)

Grand Martin-pêcheur de la Nouvelle Guinée . .	Sonn. Voy. Nouv. Guin. p. 171, t. cvi (1776).
Martin-pêcheur de la Nouvelle Guinée	Buff. Pl. Enl. 663 (c. 1780).
Great Brown Kingfisher	Lath. Syn. I. pt. 2, p. 609 (1782).
Alcedo gigas	Bodd. Tabl. des Pl. Enl. p. 40 (1783, *ex Buff.*).
Alcedo undulata	Scop. Del. Faun. et Flor. Insubr. II, p. 90 (1786, *ex Sonn.*).
Dacelo undulatus	Gray. P.Z.S. 1858, p. 189.
Alcedo fusca	Gm. Syst. Nat. I, p. 454 (1788, *ex Lath.*).
Alcedo gigantea	Lath. Ind. Orn. I, p. 245 (1790).
Dacelo gigantea	Leach, Zool. Misc. II, p. 125, tab. cvi (1815).
Dacelo gigas	Gray, Gen. of B. I, p. 78 (1846).
Paralcyon gigas	Cab. & Heine, Mus. Hein. th. II, p. 165 (1850).

Gogobera, of the Natives of New South Wales *(Gould)*.

D. scapularibus brunneis: sexibus simillibus: pileo medio rufescenti-brunneo, utrinque albido: cinctu nuchali brunneo.

Hab. in Australasiâ.

Male. Head brown in the centre, becoming very dark, almost black, on the nape; feathers running along the base of the bill dirty white; lores, feathers under the eye extending backwards over the ear-coverts very dark brown, long and hairy; sides of the head extending backward round the nape white, indiscriminately marked with small bars of brown; below this white, a narrow line of dark brown feathers, encircling the neck from the extremity of the ear-coverts; below this brown collar there is another white one, rather broad and marked with indistinct little brown bars; back and scapulars brown; rump brown washed with pale blue; wing-coverts dark brown, broadly edged with pale blue appearing silvery white in some lights; quills dark blackish brown, white at the base, this white appearing at the base of the outer web of the fourth, fifth and

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Additional references.—*Dacelo undulatus*, J. E. and G. R. Gray, Cat. Mamm. and B. of N. Guin. p. 55 (1858). *Alcedo gigantea*, Bonn. et Vieill. Enc. Meth. I, p. 282 (1823); Shaw, Gen. Zool. VIII, p. 53 (1811). *Dacelo gigantea*, Vig. and Horsf. Trans. Linn. Soc. XV, p. 204 (1826); Steph. Gen. Zool. II, p. 101 (1826); Bennett, Wander. in N. S. W. I, p. 221 (1834); Gould, B. of Austr. II, pl. 18 (1848); Reich. Vög. Neuholl. p. 36 (1850); Bonap. Consp. Gen. Av. I, p. 153 (1850); Brehm, Bilder und Skizzen, p. 209 (1865); Gould, Handb. B. of Austr. I, p. 122 (1865); Scl. List Vertebr. An. Zool. Soc. p. 90 (1866); Diggles, Orn. of Austr. part I (1868). *Dacelo gigas*, Gray, Cat. Fiss. Brit. Mus. p. 51 (1848); Reich. Handb. *Alced.* p. 40, t. ccccxxvii, fig. 3161-63 (1851); Cass. Cat. Halc. Phil. Mus. p. 14 (1852); Gray, Handl. of B. I. p. 89 (1869).

sixth primaries, and forming a conspicuous white spot; most of the primaries slightly glossed with greenish blue along the outer web; the secondaries rather paler brown, narrowly tipped with white, the innermost ones palest; upper tail coverts rufous banded with blackish-brown; tail rufous banded with blackish-brown and tipped with white, the latter colour predominating and the brown bars becoming narrower as the feathers approach the outermost, the latter being rufous only at the base; underneath white, indistinctly and narrowly banded with dusky brown; upper mandible black, lower mandible pale yellow; feet dark olive-brown. Total length 17 inches, of bill from front 2·6, from gape 3·5, wing 9·0, tail 7·0, tarsus 0·75, middle toe 1·5, hind toe 0·5.

Female. Exactly similar to the male, but has not, perhaps, so much blue on the wing-coverts or the rump, the latter being more rufous.

Hab. South Eastern Australia, from New South Wales as far north as the southern parts of Queensland. (*Gould*, *Diggles*).

Although said to have been originally obtained by Sonnerat in New Guinea, the present species has never been procured in that country by any subsequent naturalist, and we must suppose that the above-mentioned author made a mistake in the locality, or else that the bird procured by him had been brought alive from the coasts of Australia.

There seem to me to be two races of the common 'Laughing Jackass,' which, however, are not sufficiently distinct to be characterized as different species, but I have invariably noted that the birds from Queensland are darker in coloration on the back and scapulars and the blue on the wing-coverts is brighter. The Australian Naturalists will do well to see if these differences are constant, especially as Queensland specimens seem to run a trifle smaller than those from other parts of the continent.

The present species thrives capitally in confinement and many arrive annually in this country. At the Zoological Gardens several specimens are always to be seen in the Western Aviary, and the naturalist can form some idea of the wild chorus to which writers have alluded, by listening to the chaotic laughing of the birds in confinement in the Regent's Park. They are accustomed to sit on the broad bar which traverses the centre of the cage, often remaining motionless for a considerable time, till one, raising his bill sky-ward, commences a low gurgle in which one after another joins, till a chorus is produced which may pass for laughing, and is certainly at times by no means dissimilar to the noise produced by the 'Laughing Hyena.' The note is considerably harsher and more disagreeable than that of its small congener the Buff Laughing Kingfisher, *Dacelo cervina*, two or three specimens of which are also exhibited in the same aviary. I cannot quite understand why the bird should have been named by the Australian colonists the Laughing *Jackass*, unless it be that they suppose the bird's note resembles the noise which would emanate from that animal if he attempted to laugh, or from the ludicrous aspect of the bird when its curiosity is aroused; if anything attracts its attention the expression assumed by the bird is most comical. In confinement the species becomes tame, and although mostly to be seen on the perch, it is active enough on the ground, its mode of progression being by a series of large hops.

The following exhaustive account of the life-history of the Laughing Jackass is copied verbatim from Mr. Gould's 'Handbook' (*l.c.*)

"The *Dacelo gigas* is a bird with which every resident and traveller in New South Wales is more or less familiar, for, independently of its large size, its voice is so extraordinary as to be unlike that of any other bird. In its disposition it is by no means shy, and when any new objects are presented to its notice, such as a party traversing the bush or pitching their tent in the vicinity of its retreat, it becomes very prying and inquisitive, often perching on the dead branch of a tree and watching with curiosity the kindling of the fire

and the preparation of the meal; its presence, however, is seldom detected until it emits its extraordinary gurgling, laughing note, which generally calls forth some exclamation according with the temper of the hearer, such as "There is our old friend the Laughing Jackass" or an epithet of a less friendly character. So remarkable are the sounds emitted by the bird that they have been noted by nearly every writer on New South Wales and its productions. Mr. Caley states that its "loud noise, somewhat like laughing, may be heard at a considerable distance, from which circumstance and its uncouth appearance, it probably received the extraordinary appellation given to it by the settlers on their first arrival in the colony." Captain Sturt says, "Its cry which resembles a chorus of wild spirits, is apt to startle the traveller who may be in jeopardy, as if laughing and mocking at his misfortunes," and Mr. Bennett in his 'Wanderings' says "Its peculiar gurgling laugh, commencing in a low and gradually rising to a high and loud tone, is often heard in all parts of the colony, the deafening noise being poured forth while the bird remains perched upon a neighbouring tree; it rises with the dawn, when the woods re-echo with its gurgling laugh; at sunset it is again heard, and as that glorious orb sinks in the west, a last 'good night' is given in its peculiar tones to all within hearing." It frequents every variety of situation; the luxuriant bushes stretching along the coast, the more thinly timbered forest, the belts of trees studding the parched plains and the brushes of the higher ranges being alike favoured with its presence; over all these localities it is rather thinly distributed, being nowhere very numerous. Its food which is of a mixed character, consists exclusively of animal substances; reptiles, insects and crabs, however, appear to be its favourite diet; it devours lizards with avidity, and it is not an unfrequent sight to see it bearing off a snake in its bill to be eaten at leisure; it also preys on small mammalia. I recollect shooting a Great Brown Kingfisher in South Australia in order to secure a fine rat I saw hanging from its bill, and which proved to be a rare species. The *Dacelo gigas* breeds during the months of August and September, generally selects a hole in a large gum-tree for the purpose and deposits its beautiful pearl-white eggs, which are one inch and nine lines long, by one inch and five lines broad, on the decomposed wood at the bottom. When the young are hatched, it defends its breeding-place with great courage and daring, darting down upon any intruder who may attempt to ascend the tree. The sexes present so little difference in their plumage, that they are scarcely distinguishable from each other; neither do the young at a month old exhibit any great variation from the adult, the only difference being that the markings are somewhat darker and the brown more generally diffused.

Mr. Diggles' account of the present species is as follows:—

"This, the most common of the three species known to inhabit Australia, is found in South Australia, Victoria, New South Wales and the southern parts of Queensland. It generally frequents open timbered country or cleared land in the neighbourhood of stations, farms, or where timber is being burned off, when snakes, lizards, locusts, &c. offer it an ample repast. Should it meet with a reptile with which it is unable individually to cope, its loud cries soon bring others to its assistance. In dealing with a snake, its custom is to seize the reptile, ascend a short distance in the air and drop it, immediately following and repeating the process a number of times, until its victim, stunned and bewildered, falls an easy prey to its voracious enemy, who, first battering it from side to side, finishes by swallowing it entire. Snakes two feet long have been taken out of the stomach, a fact which should lead persons to afford so useful an animal all possible protection. It is usually seen perching on a dead branch almost motionless, or merely moving its head from side to side, as it intently scans the ground from its elevated position. The popular name by which this bird is universally known is derived from the circumstance that it imitates in no small degree a loud boisterous laugh, which is continued for some time and accompanied with an upward jerking motion of the tail. The nest is situated in the hole of a tree. The eggs, two in number, are pearl-white and about the size of a pigeon's."

For the subjoined account of the habits of the present bird I am indebted to an

entertaining little popular work entitled 'Bush Wanderings of a Naturalist,' by the late Mr. H. Wheelwright, better known as the 'Old Bushman.' He relates as follows (p. 127):—

"About an hour before sunrise the bushman is awakened by the most discordant sounds, as if a troop of fiends were shouting, whooping, and laughing round him in one wild chorus; this is the morning song of the 'Laughing Jackass,' warning his feathered mates that daybreak is at hand. At noon the same wild laugh is heard, and as the sun sinks into the west, it again rings through the forest. I shall never forget the first night I slept in the open bush in this country: it was in the Black Forest. I woke about daybreak after a confused sleep, and for some minutes I could not remember where I was, such were the extraordinary sounds that greeted my ears; the fiendish laugh of the Jackass, the clear, flute-like note of the magpie; the hoarse cackle of the Wattle-birds; the jargon of flocks of Leatherheads; and the screaming of thousands of Parrots as they dashed through the forest, all joining in chorus, formed one of the most extraordinary concerts I have ever heard, and seemed at the moment to have been got up for the purpose of welcoming the stranger to this land of wonders on that eventful morning. I have heard it hundreds of times since but never with the same feelings that I listened to it then. The Laughing Jackass is the bushman's clock, and being by no means shy, of a companionable nature, a constant attendant about the bush-tent, and a destroyer of snakes, is regarded like the Robin at home, as a sacred bird in the Australian forests. It is an uncouth-looking bird, a huge species of land-Kingfisher, nearly the size of a crow, of a rich chesnut brown and dirty white colour, the wings slightly chequered with light blue, after the manner of the British Jay; the tail feathers long, rather pointed, and barred with brown. It has the foot of the Kingfisher, a very formidable, long, pointed beak, and a large mouth; it has also a kind of crest which it erects when angry or frightened; and this gives it a very ferocious appearance. It is a common bird in all the forests throughout the year; breeds in the hole of a tree, and the eggs are white; generally seen in pairs, and by no means shy; their principal food appears to be small reptiles, grubs and caterpillars. As I said before, it destroys snakes. I never but once saw them at this game: a pair of Jackasses had disabled a carpet-snake under an old gum-tree, and they sat on a dead branch above it, every now and then darting down and pecking it, and by their antics and chattering seemed to consider it a capital joke. I can't say whether they ate the snake—I fancy not; at least the only reptiles I ever found in their stomachs have been small lizards. The first sight that struck me on landing in London was a poor old Laughing Jackass moped up in a cage, in Ratcliffe Highway: I never saw a more miserable, woe-begone object; I quite pitied my poor old friend, as he sat dejected on his perch: and the thought struck me at the time that we were probably neither of us benefited in changing the quiet freedom of the bush for the noise and bustle of the modern Babylon."

Mr. E. P. Ramsay kindly sends me a note to the effect that the average dimensions of the eggs of *Dacelo gigas* are 1·65 inches by 1·4 in breadth.

Mr. Keulemans has been most happy in catching the attitude of the bird in the plate of the present species, the figure being drawn from a living specimen in the Zoological Gardens. Both races are illustrated in the plate, the nearer figure being taken from a Queensland specimen, while the other is drawn from a bird procured by my friend Mr. J. F. Rutter, near Melbourne, and presented to me by that gentleman.

DACELO LEACHI.

DACELO LEACHI.

(LEACH'S LAUGHING KINGFISHER.)

Dacelo Leachii, ... Lath. Linn. Trans. XV, p. 205 (1827).

D. scapularibus brunneis: sexibus differentibus, mas à caudâ cæruleâ, fœminâ à caudâ rufâ distinguendo: subtus albescens.

Hab. in parte orientali Australiæ septentrionalis.

Male. Head crested, white with a narrow streak of brown down the centre of the feathers; cheeks white with brown streaks; ear-coverts long and silky with very narrow brown streaks; back and scapularies umber brown, with a slightly paler edge; wing-coverts dark brown very broadly washed with bright shining cobalt; primary coverts deep blue; quills blackish, white at the base of both webs, the innermost secondaries light brown, the exterior web blue; lower part of the back and rump intensely bright cobalt, upper tail-coverts blue; tail blue above, blackish-brown beneath with white tips to the feathers and the internal web, especially on the outer feather, very broadly barred with white; the outer web with a bar near the end and a slight white marking on the upper part of the feather; under-parts fulvous white; sides of and a collar round the neck white, marked with thin brown bars; upper mandible blackish brown, under mandible yellowish; feet olive brown. Total length 16 inches, of bill from front 2.7, from gape 3.8, wing 8.0, tail 5.0, tarsus 0.7, middle toe 1.5, hind toe 0.7.

Female. Similar to the male, but having the tail-coverts and tail rich brown, barred with blue, the tail-feathers becoming paler towards the tip, which is white, the bar before the end of the feather being very narrow. Total length 17 inches, of bill from front 2.9, from gape 3.9, wing 8.0, tail 5.0, tarsus 0.7, middle toe 1.5, hind toe 0.7.

Hab. Queensland (*Gould*, *Diggles*).

This fine Kingfisher is a native of Queensland and the North-eastern portion of the Australian continent. Mr. Ramsay has recorded it from Port Denison, and its geographical range is given below on the authority of Mr. Diggles.

Mr. Gould, who has published beautiful figures of the male and female in the "Birds of

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Additional references.—*Dacelo Leachii*, Gray, Gen. of Birds, I. p. 78 (1846); Gould, Birds of Austr. II. pl. 19 (1847); id. Intr. Birds of Austr. p. 29 (1848); Gray, Cat. Fiss. Brit. Mus. p. 51 (1848); Bonap. Consp. Gen. Av. I, p. 154 (1850); Reich. Vog. Neu. Holl. p. 210 (1850); id. Handb. *Alced.* p. 41, t. ccccxxvi, fig. 3159-60 (1851); Macgill. Voy. Rattl. II, p. 356 (1852); Cass. Cat. Halc. Phil. Mus. p. 16 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Gray, P.Z.S. 1858, p. 189; Schl. Mus. Pays Bas, *Alced.* p. 20 (1863); Ramsay, Ibis, 1865, p. 84; Gould, Handb. Birds of Austr. I, p. 124 (1865); Diggles, Orn. Austr. pl. 12 (1867); Gray, Hand-list of B. p. 89 (1869).

Australia" states that "the habits, actions, food, and indeed the whole of the economy of the *Dacelo Leachii*, are so like those of the *D. gigas*, that a separate description of them is unnecessary."

The measurements given by me represents the average dimensions of the bird. They differ considerably from those given by Mr. Diggles, who I suspect, has either committed an error with regard to those he has furnished, or recorded the size of an unusually large specimen.

In Mr. Diggles's notes on the bird, which I here transcribe, he says:—

"This large and powerful species of Kingfisher, is as plentiful at Rockhampton as *D. gigantea* is in the South. It occurs, though by no means abundantly, in the neighbourhood of Brisbane and Ipswich, and in its habits is similar to the common species. It feeds on reptiles, centipeds and insects, and dives under the water for fish, which are carried to the nearest log, beaten to death, and devoured entire. It is sometimes destructive among young chickens, watching its opportunity and quietly dropping on its prey, carrying it off without the noise and disturbance caused by the swoops of a hawk, and consequently escaping without detection or suspicion. From its great size and strength, this *Dacelo* is able to encounter snakes of considerable size; and the indiscriminate slaughter of so useful a bird ought on every occasion to be strongly condemned. Its note differs from that of *D. gigas* in being more harsh and not lengthened into the peculiar laugh of that bird. It builds its nest in the hollow branch of a tree, the same being formed of strips of dry bark and similar materials. Eggs—two, white, and nearly round."

The description, measurements, and figures are from a fine pair in my collection from Queensland.

DACELO CERVINA.

DACELO CERVINA.

(BUFF LAUGHING KINGFISHER).

Dacelo cervina	Gould, Birds of Austr. II, pl. 20 (c. 1846).
Paralcyon cervina	Cab. & Heine, Mus. Hein. th. II, p. 164 (1860).
Dacelo cervicalis	Kaup. Fam. Eisv., p. 8 (1848.)
Dacelo salussii	Hombr. & Jacq., Voy. Pol. Sud. III, p. 100, pl. 23 (1853).

Lá rool, of the Aborigines of Port Essington (Gould).

D. scapularibus et interscapulio brunneis: sexibus dissimilibus, mari à caudâ cyaneâ, feminâ a caudâ rufo-brunneâ distinguendo: subtus fulvescens: pogonio externo rectricis extimæ haud albo fasciato.

Hab. in peninsulâ "Cape York" dictâ.

Male. Head crested, white, with dark brown longitudinal stripes down the centre of each feather, the sides of the head near the nape tinged with greenish blue; the forehead tinged with buff; cheeks and ear-coverts buffy-white with thin longitudinal streaks of brown; sides of the neck and a collar encircling the latter, buff with a few brown markings; upper part of the back and scapularies dark brown, the edges of the feathers being a little lighter; wing-coverts very rich silvery cobalt; edge of the wing white; primary-coverts prussian blue; quills blackish, paler underneath, white at the base and for the greater part of the inner web, the outer web margined with blue, especially on the secondaries; entire back very rich silvery cobalt; tail bright indigo above, blackish beneath, all the feathers tipped with white, and having one (sometimes two) irregular bars of white near the end of the feather, the outer web of the exterior rectrix uniform blue, except a white spot near the end of the feather; chin white, extending a little way down the throat; rest of the under surface of the body buff with minute transverse vermiculations; upper mandible brownish horn colour, lower mandible yellowish, brown at the base; feet olive-brown. Total length 16 inches, of bill from front 2.7, from gape 3.7, wing 7.5, tail 5.3, tarsus 0.9, middle toe 1 4, hind toe 0.6.

Female. Similar to the male, but the tail rufous-brown, barred with bright blue.

Hab. Cape York (*Cockerell*) Port Essington (*Gould*).

Additional references.—*Dacelo cervina*, Gray, Gen of Birds, I, p. 78 (1846), id. Cat. Fiss. Brit. Mus. p. 51 (1848), Bonap. Consp. Gen. Av. I, p. 154 (1850), Reich. Vög. Neuholl, p. 38 (1850), id. Handb. *Alced.*, p. 40, t. cccxxviii, fig. 3164-65 (1851), Cass. Cat. Halc, Phil. Mus. p. 16 (1852). Gray, P.Z.S., 1858, p. 189, Schl. Mus. Pays Bas, *Alced.*, p. 19 (1868), Gould, Handb. Birds of Austr. I, p. 125 (1865), Gray, Hand-list of Birds, p. 89 (1869).

This splendid Kingfisher is closely allied to the *Dacelo Leachi*, but differs in the buff colour of the under side of the body, and in the generally brighter tone of the plumage. It is by no means a common bird in collections, those contained in our museums in this country being generally received from Cape York.

Mr. Gould, who has given very beautiful figures of the species in his great work on the 'Birds of Australia,' has recorded in his 'Handbook' (*l.c.*) the following details, which, as they seem to embody all that is known respecting it, I here transcribe:—

"The North-Western portions of Australia constitute the true habitat of this species; it was observed in tolerable abundance by Sir George Grey during his expedition to that part of the country, and specimens of it have formed a part of every collection of any extent made at Port Essington. In disposition it appears to be more shy and wary than the *Dacelo gigas* of New South Wales, of which it is a representative. Gilbert, who observed it in the Coburg Peninsula, states that it "inhabits well-wooded forests, generally in pairs, is very shy and difficult to procure, and is very fond of perching on the topmost dead branch of a tree, whence it can have an uninterrupted view of everything passing around, and whence it pours out its loud discordant tones. Sometimes three or four pairs may be heard at one time, when the noise is so great that no other sound can be heard. The natives assert that it breeds in the honey-season, which is during the months of May, June and July."

"In his 'Journal of an overland expedition from Moreton Bay to Port Essington,' Dr. Leichart states that "the Laughing Jackass (*Dacelo cervina*, Gould) observed near the Gulf of Carpentaria is of a different species from that of the eastern coast, is of a smaller size, and speaks a different language; but the noise is by no means so ridiculous as that of *Dacelo gigas;* he is heard before sunrise, and immediately after sunset, like his representative of the eastern coast; the latter was observed as far as the Upper Lynd, where the new one made his appearance. The food of this Kingfisher is doubtless similar to that of the *Dacelo gigas*. The stomachs of those examined by Gilbert were tolerably muscular, and contained the remains of Coleopterous and other kinds of insects."

The figures represented in the opposite plate are taken from an adult pair of birds, the male being a Port Essington specimen lent me by Mr. Gould, and the female one of those recently brought home from Cape York by Messrs Cockerell and Thorpe. The descriptions are from the same birds.

DACELO OCCIDENTALIS

DACELO OCCIDENTALIS.

(WESTERN LAUGHING KINGFISHER).

Dacelo occidentalis. . . . . . Gould, P.Z.S., 1869, p. 602.

D. scapularibus et interscapuliis brunneis: sexibus dissimilibus, mari à caudâ cyaneâ, feminâ à caudâ rufo-brunneâ distinguendo: subtus fulvescens: pogonio externo rectricis extimi albo conspicuè fasciato.

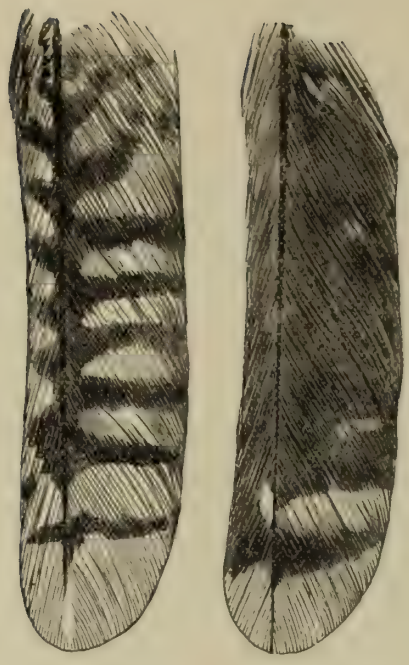
Hab. in parte septentrionali Australiæ occidentalis.

Head crested, white with the shaft of the feather narrowly bordered with dark brown, giving a striped appearance; back and scapularies light brown; upper part of the back white, lower part and rump very rich silvery cobalt; lesser wing-coverts light brown, the greater coverts for the most part bright cobalt; edge of the wing white; primary-coverts bright indigo; quills blackish, white at the base, the outer edge especially of the secondaries broadly washed with indigo, the apex of the feather narrowly edged with white; upper tail-coverts indigo; tail bright indigo above, black beneath, the two centre feathers wholly blue, the others for the most part blue tipped with white and the inner web having a single white bar or spot, the outer rectrix regularly barred with white on both webs for the entire length; feathers at the base of the bill, cheeks, throat, sides and back of the neck white; ear-coverts white striped with lines of brown; rest of the under surface of the body pale fulvous, under wing-coverts whitish, faintly barred with many lines of brown; upper mandible dark horn-colour, yellowish along the base, lower mandible yellowish, darker at the base. Total length 16 inches, of bill from front 3.2, from gape 4.1, wing 7.5, tail 4.3, tarsus 0.7, middle toe 1.4, hind toe 0.7.

Female. Similar to the male, but has the upper tail-coverts and tail sienna barred with bright blue. Total length 16.0 inches, of bill from front 3.0, from gape 3.7, wing 7.8, tail 4.7, tarsus 0.6, middle toe 1.4, hind toe 0.7.

Hab. North Western Australia (*Gregory, mus. J. Gould*).

In a communication made to the Zoological Society on the 25th of November, 1869, this species was described by Mr. Gould, and separated on apparently very good distinctions from *Dacelo cervina*. There is in the North Western species a very decided preponderance in size of bill, and the tails of the male birds differ considerably as will be seen by the accompanying wood-cuts, which represent the outer rectrix of a male of each species.



1. *D. occidentalis.* 2. *D. cervina.*

In the present species the outer web is very distinctly barred, while in *D. cervina* it is entirely unbarred. I should mention, however, that in the British Museum there are specimens of a *Dacelo* from Port Essington, which have the outer rectrix barred with white, and which ought for that reason to be referred to *D. occidentalis*, but the bars are not nearly so distinct as in the figure of the type-specimen given above, and as therefore we find that, as represented in the above wood-cut, the bars on the inner web of the outer rectrix in *D. cervina* are apparently gradually assumed, we cannot place too much reliance on the character of the tail, without further evidence before us. We are compelled at least to believe that *D. occidentalis* ranges as far as Port Essington, where it inosculates with *D. cervina*, which, on the other hand, takes its place from Port Essington to Cape York. The chief difference between the two species is therefore to be found in the huge bill of the Western form. The type-specimens are apparently very old birds as the plumage generally is much worn and bleached. The description given above is taken from the original types, which were kindly placed in my hands by Mr. Gould, and a good representation of them will be found in the accompanying plate.

Having recently visited Leiden I found in the splendid collection of birds in the Museum there several specimens of a *Dacelo* from Port Albany apparently referable to the present species. After examining these I feel more sceptical as to the distinctness of *D. occidentalis* from *D. Leachi*, since in several of the specimens at Leiden, there were traces of markings on the breast, and the tail-feathers were similar. Unfortunately I had not at hand a sufficient number of specimens of *D. Leachi* for comparison, but it will be necessary to subject a series of each to a rigid examination before finally deciding on their specific separation. From *Dacelo cervina* I am satisfied that the present species is distinct.

DACELO GAUDICHAUDI, ♂ & ♀.

DACELO GAUDICHAUDI.

(GAUDICHAUD'S KINGFISHER.)

Dacelo Gaudichaud . . Quoy et Gaim. Voy. de l'Uran. p. 112, pl. 15 (1824).
„ *Gaudichaudii* . . Gray and Mitch. Gen. of Birds, I. p. 78 (c. 1844).
Choucalcyon Gaudichadii . Less. Traité d'Orn. p. 248 (1831).
Monachalcyon Gaudichaudii . Reich. Handb. *Alced.* p. 37, t. ccccxxv, fig. 3156 (1851).
Sauromarptis Gaudichaudi . Cab. and Heine, Mus. Hein. th. II, p. 164 (1860).
Mankinetrous and *Mangrogone*, of the Papuan natives *(Quoy and Gaimard)*.
Salba, of the natives of Guébé, (*Quoy and Gaimard*).

D. scapularibus et interscapulio nigerrimis: sexibus differentibus, mari à caudâ cœruleâ, feminâ à caudâ rufo-brunneâ distinguendo: pileo cum genis et regione paroticâ nigris: torque cervicali lætè ochraceâ: pectore castaneo.

Hab. in Novâ Guineâ et in insulis adjacentibus.

Male.—Crown of the head, cheeks, ear-coverts, upper part of the back and scapularies deep black, in very old birds a few of the feathers narrowly edged with bright blue; a patch of feathers along the base of the upper mandible, a stripe behind the eye, and a collar round the neck ochre; a spot on the occiput, white; wing-coverts black, washed with bright cobalt; wing-feathers blackish, the inner-web light ochre from the base, the outer web edged with deep indigo, more especially on the secondaries; lower part of the back and upper tail-covert bright silvery blue; tail deep indigo above, black underneath; throat pure white; sides of the neck and under wing-coverts white tinged with light ochre; the rest of the under-surface of the body deep chesnut; bill light yellow, the upper mandible tinged with black; feet black. Total length 11.8 inches, of bill from front 1.8, from gape 2.7, wing 5.3, tail, 4, tarsus 0.09, middle toe 0.9, hind toe 0.5.

Female.—Similar to the male, but having the colours not quite so bright, and the tail reddish-brown.

Additional references.—*Dacelo Gaudichaudi*, Müller, Verh, Ethn. p. 22 (1839), Gray, Cat. Fiss. Brit. Mus. p. 52 (1848), Bonap. Consp. Gen. Av. I, p. 154 (1850), Cass. Cat. Hale. Phil. Mus. p. 14 (1852), Sclater, Proc. Lin. Soc. II, p. 155 (1858), Gray, P. Z. S. 1858, p. 171, id. P. Z. S. 1859, p. 154, id. P. Z. S 1861, p. 433, Schl. Mus. Pays Bas, *Alced.* p. 20 (1863), id. Vog. Ned. Ind. pp. 13, 49, pl. 4 (1864), Rosenb. Journ. f. Orn. 1864, p. 118. *Choucalcyon Gaudichaudi*, Bonap. Consp. Vol. Anis. p. 9 (1854).

Hab. New Guinea (*Quoy and Gaimard*, *Wallace*, *von Rosenberg*), Waigiou (*Wallace*), Mysol (*Wallace*), Ceram (*Mus Lugd.*), *Aru Islands* (*Wallace*).

For the discovery of this beautiful Kingfisher science is indebted to MM. Quoy and Gaimard, the Naturalists attached to the "Uranie and Physicienne" in their voyage round the world. In the "Zoologie" of the above-mentioned voyage we find the following note.

"This species, to which we have given the name of our friend and colleague, the Botanist attached to this expedition, inhabits the woods of the Papuan Islands; the aborigines call it *mangroyone* and *mankinetrous;* the inhabitants of Guébé call it *salba*, these being the names employed by the islanders for all Kingfishers. It is not shy and is easily approached. The individuals that we killed had their beaks still covered with the earth in which they had just been digging to procure their food."

A tolerable figure of one of the type specimens is given in the "Atlas" of the voyage, which is reproduced by Prof. Reichenbach in his "Handbuch," but it gives no idea of the extreme beauty of the bird, which is one of the handsomest Kingfishers in existence.

The exertions of Mr. Wallace revealed many new facts concerning the geographical distribution of the present species, as will be seen by a reference to the list of localities given above.

I am indebted to his kindness for the following note.

"This fine species was not uncommon in swampy jungle, where its curious loud barking was often heard, and was sometimes mistaken for a dog. It feeds on crustacea, mollusca and myriapoda which it picks up off the ground. I at first took the blue and brown-tailed forms for distinct species and have a note to the former "sexes alike;" but have unfortunately not kept a blue-tailed female, as I afterwards came to the conclusion that the difference was sexual."

Herr G. von Rosenberg remarks as follows, in his "Beitrag zur Ornithologie von Neu-Guinea" (*l.c.*) :—"A remarkable appearance is observed in this species as in *Chalcopsitta leucopygialis*; there exist, namely, two constant varieties of it, one with a reddish-brown, the other with a blue tail, but otherwise coloured alike. The latter variety is the rarest. It lives in all the other islands belonging to New Guinea, and is by no means uncommon."

Mr. Wallace, having carefully sexed his specimens, enables us to determine with certainty that the birds with the brownish-red tail are the females, but I think that the red tail is not assumed at once, but gradually. My friend Dr. T. Salvadori of Turin, who has taken a great interest in the present work, lately forwarded me a list of specimens of Kingfishers contained in the Zoological Museum of that city, and in his remarks upon the present species, he mentions that they possess one specimen only at Turin from the Aru Islands, "*caudâ rufo-castaneâ, rectrice unâ tantum cyaneâ.*" Dr. Salvadori does not tell me from whom the specimen was procured, but it is labelled a male. The accuracy of this determination I must call in question, in the face of the evidence brought by Mr. Wallace, but Dr. Salvadori's remarks are not the less interesting as shewing that the red tail is not directly assumed. Moreover, the original describers (*l.c*) state that "two other individuals, coming from the same localities present some slight differences; the tail of one has no black at the extremity and that of the other is red underneath, a shade of colour, which in the case of the latter is probably due to age; for sundry blue spots seem to indicate that in time this part of the birds plumage will become entirely of this same colour."

The fine pair represented in the accompanying plate were procured by Mr. Wallace. The male, in his collection, is from Waigiou; the female, in my own collection, was obtained in New Guinea.

DACELO TYRO.

DACELO TYRO.

(MANTLED KINGFISHER.)

Dacelo tyro, . . Gray, P.Z.S. 1858, p. 171, pl.
Sauromarptis tyro, . Cab. and Heine, Mus. Hein. th. II, p. 164, note (1860).

D. scapularibus et interscapulio nigerrimis: sexibus vix distinguendis: pileo cum genis et regione parotică nigris, ochraceo maculatis: torque cervicali et dorso superiori nigris, ochraceo fasciatis: pectore ochraceo.

Hab. in insulis Papuanis dictis "Aru."

Head, cheeks and ear-coverts black, spotted with light ochre; back and sides of the neck together with the upper part of the back black, banded with deeper ochre; scapularies black; wing-coverts black, broadly washed with bright blue; wing-feathers blackish, the inner web light rufous from the base, the exterior web broadly margined with indigo, more especially on the secondaries; lower part of the back and upper tail coverts bright cobalt; tail above indigo, beneath black; throat whitish ochre; under-surface of the body deep ochre, deepest on the flanks and under tail-coverts; bill with the upper mandible deep black, the lower manbible yellow; feet dusky black. Total length 12 inches, of bill from front 1.6, from gape 2.5, wing 6, tail 4.7, tarsus 0.6, middle toe 1, hind toe 0.4.

Hab. Aru Islands (*Wallace*, *von Rosenberg*).

This remarkably handsome species, justly characterized by Mr. Gould as "one of the finest of Mr. Wallace's discoveries," seems to be confined to the Aru Islands. Professor Schlegel in the "Museum des Pays Bas" and again in his "Vogel van Nederlandsch Indië" insisted that it was only the young of *Dacelo Gaudichaudi*, a conclusion that a subsequent consideration compelled him to rectify (*l.c.*), and he now recognises it as a distinct species. Mr. Gould has given a very beautiful plate in the twelfth part of his "Birds of Asia" representing the male and female.

The habits of the present bird exactly resemble those of *D. Gaudichaudi* according to Mr. Wallace. My description and measurements are taken from a finely preserved skin in his collection, procured by him in the Aru Islands. The female resembles the male, with the exception of the wing-feathers and the tail, which have a greenish tinge.

Additional references.—*Dacelo tyro*, Gray, Cat. Birds from New Guinea, p. 19 (1858), id. P. Z. S. 1861, p. 433, Gould, Birds of Asia, pl.—(1860), Rosenb. Journ. f. Orn. 1864, p. 118, Schlegel, Ned. Tidschr. 1866, p. 339.

CITTURA SANGHIRENSIS.

CITTURA SANGHIRENSIS.

(SANGHIR KINGFISHER.)

Cittura sanghirensis, . . . Sharpe, P.Z.S. 1868, p. 270, pl. xxvii.

C. major: fronte et maculâ ad basin mandibulæ nigris, albo punctatis: capitis lateribus saturatè cæruleis, albo punctatis.

Hab. in insulâ dictâ "Sanghir" maris Celebensis.

Head rufescent, lighter on the nape; back dark straw-colour, much paler on the outer edge of the scapularies; upper tail-coverts and tail-feathers deep rufous; wing-coverts deep blue-black; wing-feathers blackish, the exterior web edged with dark blue, the inner web of the secundaries broadly edged with straw-colour; forehead and a patch of feathers at the base of the lower mandible black, with very small white spots; the sides of the head deep blue-black, with distinct white spots at the tip of each feather; chin white; cheeks, ear-coverts, sides of the neck and upper part of the breast lilac, with violet reflexions; lower part of the breast, abdomen, and under wing-coverts whitish, tinged with fulvous; bill very deep coral red; feet yellowish-brown. Total length 9.7 inches, of bill from front 1.5, from gape 2.01, wing 4.6, tail 4.2, tarsus 0.5, middle toe 0.7, hind toe 0.4.

Hab. Sanghir *(von Rosenberg)*.

This very handsome bird was first described by me at a meeting of the Zoological Society on May 14th, 1868, and was figured in the "Proceedings" for that year. The rarity of *Cittura cyanotis* (hitherto the only known species of this extraordinary genus), renders the discovery of a new and finer species of very great interest. The original specimen was purchased by me of Mr. Frank, of Amsterdam, to whom it was sent from the island of Sanghir, a little to the north of Celebes. Several specimens were received by him, two of which are in the Leiden Museum, and two in the British Museum, while the type is in my own collection.

The present species may be distinguished from *C. cyanotis* by its larger size, black forehead, and also by the deep blue-black colour of the sides of the head, each feather being pointed with white. A reference to the plates will sufficiently indicate the differences existing in the two species.

I have lately purchased from the "Maison Verreaux" a specimen of what I believe to be the young of the present bird. It was sold to me as *Cittura cyanotis* from Celebes. It is, however, certainly not of that species, as the white spots on the feathers at the sides of the head are plain enough. On the other hand it has not any appearance of a black forehead, and only a very slight developement of the mandibular patch of black feathers, without any of the characteristic white spots. Notwithstanding the locality whence this

specimen is said to have come from, I cannot but believe that it is only the young of *Cittura sanghirensis*, making the sixth specimen I have seen. I append the measurements of this bird, in case the receipt of further specimens from Celebes should lead any Ornithologist to consider it an intermediate species:—Total length 9 inches, of bill from front 1.3, from gape 1.8, wing 4.01, tail 3.4, tarsus 0.5, middle toe 0.7, hind toe 0.07.

I had written thus far, when I received some notes on the two species of *Cittura* from my friend, Dr. Otto Finsch of Bremen, which I think of considerable interest. He writes, "On *Dacelo cyanotis* and *sanghirensis* I have the following remark to make. We possess two specimens, one of which is from Celebes (collected by von Rosenberg), and therefore the true *cyanotis*. It is not an old bird, and has the back olive-brown, the tail reddish-brown; the wing-coverts blackish, variegated with blue. The feathers of the supercilium and sides of the head are dark bluish-black, some of them variegated with white, but not forming a distinct white supercilium; on the angle of the mouth some black feathers; ear-coverts and cheeks reddish lilac, bill very broad and depressed; forehead the same reddish-cinnamon-brown as the vertex and occiput."

"The other specimen is from Shangir (collected by von Rosenberg and procured from Frank), and is a very old male; all the colours are much brighter and more splendid. The forehead is black, as also a spot at the gape, the feathers on the sides of the head and the eyebrows are deep blue-black, those of the latter tipped with white, forming a distinct superciliary stripe of white; head and back bright cinnamon-red, also the tail; shoulders light cinnamon-yellow, wing-coverts dark blue; ear-coverts and cheeks beautiful lilac. The bill is rather narrower at the base."

"The differences of these two birds are remarkable, but I believe them to be only caused by age. A second specimen from Shangir (Frank) had the bill as broad as our Celebes specimen. Therefore, the bill is not a character whereby to distinguish the two species, but I have not seen enough specimens, and my opinion must, therefore, be of less value. From the observations I have made of these Kingfishers, I can only consider them to be the old and young of the same species."

Dr. Finsch considers, therefore, that *C. cyanotis* is the young of *C. sanghirensis*, because his first specimen comes from Celebes. But a comparison of his description with the remarks given by me of my Celebean bird will shew that they are nearly identically the same, while the fact of their having blue-black cheeks with the white superciliary line of feathers, shews that they are not *C. cyanotis*. The latter seems to be extremely rare. It is, however, very curious that the two Celebes should differ so considerably from the Sanghir specimens, and this fact argues strongly in favour of the former being a distinct species, but at present I can only say that I entirely agree with Dr. Finsch, and consider it the young of *C. sanghirensis*. If this should ultimately prove to be the case, Celebes must be added as an additional habitat of this lovely species.

The figure in the plate is drawn from the type specimen in my own collection, from which also I have taken the description and measurements.

CITTURA CYANOTIS.

CITTURA CYANOTIS.

(BLUE-EARED KINGFISHER.)

Dacelo cyanotis, . . Temm. Pl. Col. 262.
Cittura „ . . . Reich. Handb. *Alced.* p. 38, t. ccccxxix, fig. 3170 (1851).

C. minor: capitis lateribus nitidè cæruleis, lilacino punctatis.

Hab. in parte septentrionali insulæ "Celebes" dictæ.

Head orange-rufous; back and scapularies yellowish-brown, the latter edged with pale straw-colour; tail-coverts and tail deep rufous; upper wing-coverts bright shining blue; wing-feathers brownish, washed with blue near the base and edged with straw-colour near the tips; sides of the head bright blue, the uppermost feathers tipped longitudinally with pale lilac; chin whitish; cheeks, ear-coverts and upper part of the breast lilac, each feather having a fainter streak down the centre; under surface of the body pale fulvous; bill orange-red; legs reddish-brown. Total length 9.5 inches, of bill from front 1.3, from gape 1.8, wing 3.9, tail 3.6, tarsus 0.4, middle toe 0.7, hind toe, 0.3.

Hab. Celebes *(Wallace).*

This very rare bird, still unrepresented in most European museums, has as yet only been met with in Celebes, where it was procured by Mr. Wallace, who has kindly given me the following note on its habits. Nothing has previously been recorded, consequently the value of his observations cannot be too highly estimated.

Mr. Wallace observes:—

"This species was obtained only in the hot dry forests at the foot of the great volcano of Klabat, near the north eastern extremity of Celebes. It was very scarce. Its habits were similar to those of the Dacelos, hunting about near the ground, from which it picked up insects and molluscs, returning to perch upon a low horizontal bough in the thickest parts of the jungle."

My description is taken from a specimen lent me by Mr. Wallace, procured by him in Northern Celebes, from which also the figure is taken. I should add that Temminck's type specimen was said by him to come from Sumatra, but this is certainly an error.

Additional References.—*Dacelo cyanotis*, Gray and Mitch. Gen. of Birds, I, p. 78 (c. 1844), id. Cat. Fiss. Brit. Mus. p. 52 (1848), Bonap. Consp. Gen. Av. I, p. 154 (1850), Schl. Mus. Pays Bas, *Alced.* p. 22 (1863), id. Vog Ned. Ind. *Alced.* pp. 18, 51, pl. 6 (1864).

MELIDORA MACRORHINA.

MELIDORA MACRORHINA.

(HOOK-BILLED KINGFISHER.)

Dacelo macrorhinus . . .	Less. Voy. Coq. I, p. 692, pl. 31 bis, fig. 2 (1826).
„ „ . . .	Gray, P. Z. S. 1859, p. 154.
Melidora euphrosiæ . . .	Less. Traité d'Orn. p. 249 (1831).
„ „ . . .	Bonap. Consp. Gen. Av. I, p. 153 (1850).
„ „ . . .	Bonap. Consp. Vol. Anis. p. 9 (1854).
Melidora euphrasiæ . . .	Reich. Handb. *Alced.* p. 41, t. ccccxxviii, fig. 3166-67 (1851).
Melidora macrorhina . . .	Sclater, Proc. Linn. Soc. II, p. 156 (1858).
Melidora euphrosine . . .	Rosenb. Journ. f. Orn, 1864, p. 117.
Dacelo macrorynchus . . .	Gray, P. Z. S. 1858, p. 189.
Dacelo macrorhina . . .	Schl. Mus. Pays Bas. *Alced.* p. 22 (1863).
„ „ . . .	Schl. Vog. Ned. Ind. *Alced.* pp. 17. 51, pl. 4 (1864).

M. pileo saturatè brunneo, maculis apicalibus ochracescentibus: strigâ angustâ ab oculo pileum circumdante, lætè cyaneâ: dorso cum scapularibus et tectricibus alarum saturatè brunneis latè ochraceo maculatis: subtus albida, rufo-tincta.

Hab. in Novâ Guineâ.

Head and hinder part of the neck deep brown, each feather tipped with a small spot of greenish-ochre; cheeks and ear-coverts black; a spot in front of the eye and a stripe from the base of the lower mandible to the ear-coverts, ochre; a narrow band of bright blue from the eye, encircling the head; feathers of the nape and back of the neck brown tipped with rufous; back, scapularies and wing-coverts dark brown, the tips of each feather deep greenish ochre; wing-feathers brownish, the inner web light yellowish from the base, some of the primaries edged and the secondaries tipped with greenish ochre; under surface of the body whitish tinged with rufous, especially on the throat and sides of the neck; upper mandible black, lower mandible yellowish; feet olive brown. Total length 11 inches, of bill from front 1.6, from gape 2.0, wing 4.7, tail 3.8, tarsus 0.6, middle toe 0.75, hind toe 0.3.

Hab. Dorey, New Guinea (*Lesson*, *Wallace*).

This remarkable Kingfisher, which I consider to be the extreme type of the subfamily *Daceloninæ*, is one of the rarest birds in European Museums. It has as yet only been observed in the neighbourhood of Dorey in New Guinea. There the original specimen was obtained by Lesson and there Mr. Wallace also met with it. Lesson states that it is an inhabitant of the forests in the neighbourhood of that harbour.

When we know more of the habits and economy of this rare species, I believe we shall find it to be strictly a forest bird, living amidst the thickest jungle, like *Cittura cyanotis*, which in external structure is closely allied to it. Mr. Wallace concurs in my opinion, that the food of the present species will be found chiefly to consist of lizards and crustacea, for the capture of which its bill is admirably adapted.

Herr G. von Rosenberg in his "Beitrag zur Ornithologie von Neu Guinea" gives the range of this species as "Salawati, New Guinea, and North Australia." With regard to the birds being met with in the two former localities, no one ought to be better informed on this subject than Herr von Rosenberg, but I believe I am right in affirming that the only specimens at present in Europe were collected in the neighbourhood of Havre Dorey, and I think Herr von Rosenberg must have been misinformed as to its having been found in Australia.

The left hand figure in the plate represents a female bird in Mr. Wallace's collection and from this specimen the description and measurements are taken. The right hand figure is drawn from the only example in the Leiden Museum, and exactly agrees with the bird figured by Lesson in the "Atlas" to the "Voyage of the Coquille." Whether the spotted plumage exhibited by Mr. Wallace's specimen is the sign of immaturity or sexual distinction I am unable to decide.

INDEX.

	Page.
abyssinica, Ceryle	229
,, Halcyon	229
Acacia pendula	211
Acis Kingfisher	275
acis, Tanysiptera	275
actæon, Dacelo	173
Actenoides Hombroni	221
,, Lessonii	217
,, variegata	221
advena, Alcedo	1, 2
ægyptius, Corvus	2
affinis, Alcyone	51
afra, Alcedo	67
African White-headed Kingfisher	173
Aguapim Kingfisher	147
alaudarius, Tinnunculus	172
albicilla, Alcedo	177, 197
,, Dacelo	197
,, Halcyon	177, 182, 197, 198, 250
,, Todirhamphus	197
albifrons, Dacelo	223
albogularis, Halcyon	165
Alcedininæ	v.
Alcedo	vi.
Alcedo advena	1, 2
,, afra	67
,, albicilla	197
,, albiventis	177
,, alcyon	69, 79
,, amazona	83
,, americana	89
,, asiatica	23, 24, 25
,, atricapilla	169
,, atricapilla, var.	177
,, australasia	215
,, australis	41
,, azurea	41
,, azureus	27
,, bengalensis	2, 3, 4, 8, 11, 12, 13, 14, 15, 16, 17, 23, 24, 105
,, bengalensis, var. sondaica	11
,, beryllina	31, 168
,, bicolor	91
,, biru	31
,, brama	169
,, brasiliensis	89
,, cabanisi	87
,, capensis	103, 104
,, cærulea	141
,, cæruleocephala	39
,, cærulescens	31
,, cancrophaga	171
,, chelicuti	183

	Page.
Alcedo chloris	229
,, chlorocephala	229
,, chlorocephala, var. γ	237
,, cinereifrons	195
,, cinerea	73
,, collaris	245
,, collaris, var.	1, 2, 223
,, coromanda	155
,, coromandeliana	156
,, cristata	35, 36
,, cyanea	73, 237
,, cyaneocephala	38
,, cyanocephala	29, 39
,, cyanoleuca	189
,, cyanopectus	55
,, cyanostigma	35, 36, 37, 38
,, cyanostigmata	35
,, cyanotis	141
,, cyanoventris	167
,, dea	281
,, diops	205
,, erithaca	119
,, erythrogaster	171
,, euryzona	19, 29, 30
,, fusca	161, 165, 285
,, gigantea	285
,, gigas	285
,, grandis	19, 21, 30
,, gularis	165
,, guttata	67
,, guttatus	57
,, guacu	79
,, inda	91
,, indica	91
,, ispida	1, 2, 3, 4, 7, 12, 13, 14, 17, 38, 63, 65, 143
,, ispida minor	11
,, ispida, var.	21
,, jaguacati	79
,, japonica	11, 13
,, javana	99
,, javanica	99
,, lazuli	203
,, Lecontei	147, 148
,, leucocephala	99, 103
,, leucogaster	139
,, leucogastra	139
,, Lindsayi	217
,, lugubris	59
,, madagascariensis	137
,, malimbica	195
,, maxima	67
,, melanoptera	165, 167
,, melanorhyncha	95

PAGE.

Alcedo meninting . . 23, 24, 32
,, minor . . 11
,, minor moluccensis . 21
,, moluccensis . . 11, 14, 21, 22, 113
,, nais . . . 39
,, natalensis . . 145
,, nigricans . . 19, 29
,, nitida . . 144, 145
,, nutans . . 144, 145
,, nympha . . 269
,, omnicolor . . 167
,, Pallasii . . 1, 2
,, picta . . . 141, 145
,, picturata . . 145, 146
,, pileata . . 169
,, puella . . 169
,, purpurea . . 119, 120, 141
,, pusilla . . 53, 141
,, quadribrachys . . 25, 26
,, rubescens . . 83
,, rubra . . . 119
,, rudis . . . 51
,, ruficeps . . 213
,, rufirostris . . 165
,, sacra . . . 239
,, sacra, var. D . . 223, 237
,, sacra, var. ε . . 237
,, semicærulea . . 173
,, semitorquata . . 26, 27, 37
,, senegalensis . . 191
,, senegalensis, var. a . 171
,, senegalensis, var. b . 173
,, senegalensis, var. d . 173
,, senegalensis, var. e . 171, 229
,, senegalensis, var. g . 171
,, smyrnensis . 161, 162
,, smyrnensis, var. b . 165
,, solitaria . . 115
,, sondaica . . 11, 13
,, stellata . . 77
,, striolata . . 183
,, subispida . . 1
,, superciliosa . . 93
,, torquata . . 73, 77
,, tribrachys . . 41
,, tridactyla . . 119
,, tridactyla, var. . . 121
,, tuta . . . 249
,, ultramarina . . 141
,, undulata . . 285
,, vagans . . 237
,, variegata . . 183
,, venerata . . 245
,, Verreauxii . . 23, 24
,, vestita . . 83
,, vintsioides . . 33
,, viridirufa . . 91
,, viridis . . 89
Alcyon, calipyga . . 155
alcyon, Alcedo . . 69, 79
,, Ceryle . . 79, 166
,, Chloroceryle . . 79
,, Ispida . . 79
,, Megaceryle . . 79
,, Streptoceryle . . 79
Alcyone . . . vii.
Alcyone affinis . . 51

PAGE.

Alcyone azurea . . 25
,, azurea . . 41, 45, 47, 49, 51, 53
,, azurea, var. Lessonii . 49
,, cincta . . 55, 56
,, cyanopectus . . 55, 56, 113
,, diemensis . . 41, 47
,, lepida . . 131
,, Lessoni . . 149, 51
,, pulchra . . 41, 45
,, pusilla . . 53, 54
amauroptera, Halcyon . . 97
,, Pelargopsis . 97
,, Rhamphalcyon . 97
Amazon Green Kingfisher . 83
amazona, Alcedo . . 83
,, Ceryle . . 83
,, Chloroceryle . 83
amazonæ, Ceryle . . 83
amazonia, Ceryle . . 83, 84
Amazonis bicolor . . 91
Amazonis superciliosa . . 93
americana, Alcedo . . 89
,, Ceryle . . 84, 89
,, Chloroceryle . 89
Angola Kingfisher . . 189
Aru Island Kingfisher . . 273
Ashy-fronted Kingfisher . . 195
asiatica, Alcedo . . 23, 24, 25
Astacophilus concretus . . 219
,, Lindsayi . . 217
atricapilla, Alcedo . . 169
,, var., Alcedo . . 177
,, Dacelo . . 169
atthis, Graccula . . 2
aurantius, Brachypternus . 15
australasia, Alcedo . . 215
australasiæ, Halcyon . . 215
,, Sauropatis . . 215
,, Todirhamphus . 239
Australian Saw-billed Kingfisher . 153
australis, Alcedo . . 41
Azure Kingfisher . . 41
azurea, Alcedo . . 41
,, Alcyone . . 25, 41, 45, 47, 49, 51, 53
,, Ceyx . . . 41, 49
azurea, var. Lessonii, Alcyone . 49
azureus, Alcedo . . 27
badia, Halcyon . . 159
,, Dacelo . . 159
Bakaka . . . 99
Banded Kingfisher . . 251
Bang-kaka . . . 103
Batchian Kingfisher . . 51
Beautiful Kingfisher . . 131
Belted Kingfisher . . 79
bengalensis, Alcedo . . 2, 3, 4, 8, 11, 12, 13, 14, 15, 16, 17, 23, 24, 105
bengalensis, var. sondaica, Alcedo 11
Beryl Kingfisher . . 31
beryllina, Alcedo . . 31, 168
bicincta, Ispida . . 61, 64
,, Ceryle . . 61
bicolor, Alcedo . . 91
,, Amazonis . . 91
,, Ceryle . . 91

	Page.
bicolor, Chloroceryle	91
Binti	23
Binti-abang	121
Bintsi	33
biru, Alcedo	31
bitorquata, Ispida	61
Black and Blue Kingfisher	201
Black-capped Kingfisher	169
Black-cheeked Kingfisher	253
Blue and White Kingfisher	257
Blue-crested Kingfisher	39
Blue-eared Kingfisher	301
Blue-girt Kingfisher	55
Bornean Kingfisher	123
Bornean Stork-billed Kingfisher	99
Bouru Kingfisher	125
Brachypternus aurantius	15
brama, Alcedo	169
Brazilian Green Kingfisher	89
brasiliensis, Alcedo	89
Broad-belted Kingfisher	29
Brown-hooded Kingfisher	177
Brown-shouldered Stork-billed Kingfisher	97
brunniceps, Halcyon	105
buccoides, Dacelo	251
Buff Laughing Kingfisher	291
burmanica, Pelargopsis	104, 109
Burmese Stork-billed Kingfisher	109
Burong-biru	31
Burong-Kaka	103
Burong-udang	169
Buru	245
Cabanis' Green Kingfisher	87
Cabanisi, Alcedo	87
,, Ceryle	87, 90
Cabanisii, Chloroceryle	87
cærulea, Alcedo	141
,, Ispidina	141
cæruleocephala, Alcedo	38
,, Corythornis	36, 37, 39, 40
cærulescens, Alcedo	31
cæruleus, Todus	141
cæsia, Megaceryle	73
cajeli, Ceyx	127
,, Dacelo	127
calipyga, Alcyon	155
Callalcyon coromanda	155
,, lilacina	155
Callialcyon coromanda	155
cancrophaga, Alcedo	171
,, Halcyon	159, 191
Cancrophaga cinereifrons	195
,, cyanoleuca	189
,, malimbica	195
,, rufiventris	173
,, semicærulea	173
,, senegalensis	191
,, senegaloides	137
capensis, Alcedo	103, 104
,, Halcyon	103, 105, 111
,, Rhamphalcyon	107
Carcineutes	xix.
,, melanops	253
,, pulchellus	251, 252
Caridonax	xviii.
,, fulgidus	257
Cassini, Halcyon	223
Ceram Kingfisher	279
Certhia lutea	156
cervicalis, Dacelo	291
cervina, Dacelo	256, 291, 293
,, Paralcyon	291
Ceryle	viii.
,, abyssinica	229
,, alcyon	79, 166
,, amazona	83
,, amazonæ	83
,, amazonia	83, 84
,, americana	84, 89
,, bicincta	61
,, bicolor	91
,, Cabanisii	87, 90
,, gigantea	67, 68, 69
,, guttata	57, 60
,, inda	91, 92
,, leucomelanura	61
,, lugubris	59, 60
,, maxima	67, 68, 69, 71, 80
,, rudis	4, 16, 26, 61, 63, 64, 66
,, Sharpei	69, 71, 73
,, stellata	77
,, superciliosa	92, 93
,, torquata	73, 74, 75, 77, 80, 84
,, varia	61, 65
,, viridirufa	91
Ceycopsis fallax	xv., 135
Ceyx	xii.
Ceyx azurea	41, 49
,, cajeli	127
,, cyanea	41
,, cyanopectus	55
,, Dillwynni	123, 125, 126
,, erythaca	119
,, lepida	125, 127, 129, 133, 134
,, luzoniensis	119
,, meninting	23, 115
,, melanura	117, 125
,, microsoma	119
,, philippinensis	56, 113
,, purpurea	119
,, pusilla	53
,, rubra	119
,, rufidorsa	120, 121, 129, 138
,, Sharpei	123
,, solitaria	116
,, tridactyla	119, 120, 121, 122, 125
,, uropygialis	133
,, Wallacei	129
Chalchopsitta leucopygialis	296
chalcites, Chloroceryle	89
chelicutensis, Halcyon	183
chelicuti, Alcedo	183
,, Dacelo	183
,, Halcyon	183
,, Pagurothera	183
Chelicutia fuscicapilla	177
,, pygmæa	183
,, striolata	183
Chesnut Kingfisher	159

	Page.
Chidolde	67
Chilian Kingfisher	77
chloris, Alcedo	229
,, Dacelo	229
,, Halcyon	166, 229, 230
,, Sauropatis	229
,, Todirhamphus	229
chlorocephala, Alcedo	229, 237
,, Dacelo	229
,, Halcyon	229
,, var. b., Dacelo	239
chlorocephalus, Todirhamphus	229
Chloroceryle alcyon	79
,, amazona	83
,, americana	89
,, bicolor	91
,, Cabanisi	87
,, chalcites	89
,, inda	91
,, leucosticta	83, 84
,, stellata	77
,, superciliosa	93
,, viridirufa	21
Choucalcyon Gaudichaudi	295
Chuckack-wrang	121
cincta, Alcyone	55, 56
cinerea, Alcedo	73
cinereifrons, Alcedo	195
,, Cancrophaga	195
,, Dacelo	195
,, Halcyon	195
,, Todirhamphus	195
Cinnamon Kingfisher	213
Cinnamon-breasted Kingfisher	259
cinnamomina, Dacelo	213
,, Halcyon	213, 214, 215
,, Sauropatis	213
cinnamominus, Todirhamphus	213
Cittura	xx.
,, cyanotis	299, 300, 301, 304
,, sanghirensis	299
collaris, Alcedo	245
,, Halcyon	229, 239
,, Todirhamphus	229
,, var. 1, 2, Alcedo	223
Columma flammea	194
Common Kingfisher	i.
concretus, Astacophilus	219
concreta, Dacelo	219
,, Halcyon	219
,, Paralcyon	219
Coporhamphus recurvirostris	247
,, sacer	249
,, veneratus	245
coromanda, Alcedo	155
,, Callalcyon	155
,, Callialcyon	155
,, Dacelo	155
,, Halcyon	155, 156
,, major, Halcyon	155
,, minor, Halcyon	155
coromandeliana, Alcedo	156
,, Halcyon	16, 155, 156
,, major, Dacelo	155
coromandelianus, Halcyon	155, 156
coromondelicus, Halcyon	155
coromander, Halcyon	155
coronata, Dacelo	223
,, Halcyon	215, 223
,, Paralcyon	215
,, Todirhamphus	215
Coronetted Kingfisher	215
coromandeliana, Halcyon	16
Corythornis	vi.
Corvus ægyptius	2
Corythornis cæruleocephala	36, 35, 39, 40
,, cristata	vi., 32, 37, 39, 40
,, cyano-cephala	39
,, cyanostigma	vi., 35, 36
,, galerita	vii.
,, leucogastra	139
,, nais	39, 40
,, nitida	145
,, vintsioides	33, 34
Crab-eating Kingfisher, var. e	173
Cream-coloured Stork-billed Kingfisher	95
cristata, Alcedo	35, 36
,, , Corythornis	35, 37, 38, 40
Cyanalcyon diops	205
,, lazuli	203
,, leucopygius	199
,, Macleayii	207
,, pyrrhopygius	211
cyanea, Alcedo	73, 237
,, , Ceyx	41
cyaneocephala, Alcedo	38
cyanipectus, Alcedo	55
cyaniventris, Alcedo	167
cyanocephala, Alcedo	29, 39
,, Corythornis	39
cyanocephalus, Dacelo	255
cyanoleuca, Alcedo	189
,, Cancrophaga	189
,, Halcyon	189, 192
cyanopectus, Alcyone	55, 56, 113
,, Ceyx	55
cyanostigma, Alcedo	35, 36, 37, 38
,, Corythornis	35, 36
cyanostigmata, Alcedo	35
cyanotis, Alcedo	141, 145
,, Cittura	299, 300, 301, 304
,, Dacelo	300, 301
,, Halcyon	141
,, Ispidina	141
cyanoventris, Alcedo	167
,, Halcyon	167, 168
Dacelo	xvii.
,, actæon	173
,, albicilla	197
,, albifrons	223
,, atricapilla	169
,, badia	159
,, buccoides	251
,, cajeli	125
,, cervicalis	291
,, cervina	236, 291, 293
,, chelicuti	183
,, chloris	229
,, chlorocephala	229
,, chlorocephala, var. b	239
,, cinereifrons	195
,, cinnamomina	213

	Page.
Dacelo concreta	219
,, coromanda	155
,, coromandeliana	155
,, coromandeliana major	155
,, coronata	223
,, cyanocephalus	255
,, cyanotis	300, 301
,, dea	269, 275, 277
,, diops	205
,, dryas	193
,, fallax	135
,, Forsteni	235
,, fulgida	257
,, funebris	243
,, fusca	161
,, fuscicapilla	177
,, Gaudichaudi	295, 297
,, gigantea	285, 290
,, gigas	179, 285, 266, 287, 288, 292, 299
,, Grayi	227
,, hydrocharis	273
,, lazuli	203
,, Leachi	289, 290, 292, 294
,, lepida	131
,, Lessonii	217
,, Lindsayi	217
,, Macleayii	207
,, macrorhina	303
,, macrorhinus	303
,, macrorhynchus	303
,, madagascariensis	137
,, melanops	253
,, melanoptera	167
,, melanura	117
,, monachus	255
,, nigrocyanea	201
,, nullitorquis	245
,, occidentalis	293
,, omnicolor	167
,, pileata	169
,, princeps	255
,, pulchella	251
,, pygmæa	183
,, pyrrhopygia	211
,, rubra	119
,, ruffulus	137
,, ruficeps	213
,, rufidorsa	121
,, rufiventris	171
,, sabrina	263
,, sacra	249
,, salussii	291
,, sancta	237, 239
,, sanghirensis	300
,, senegalensis	191
,, smyrnensis	161
,, striata	177
,, striolata	183
,, sylvia	259
,, syma	153
,, torotoro	153
,, tschelicutensis	183
,, tyro	297
,, undulatus	285

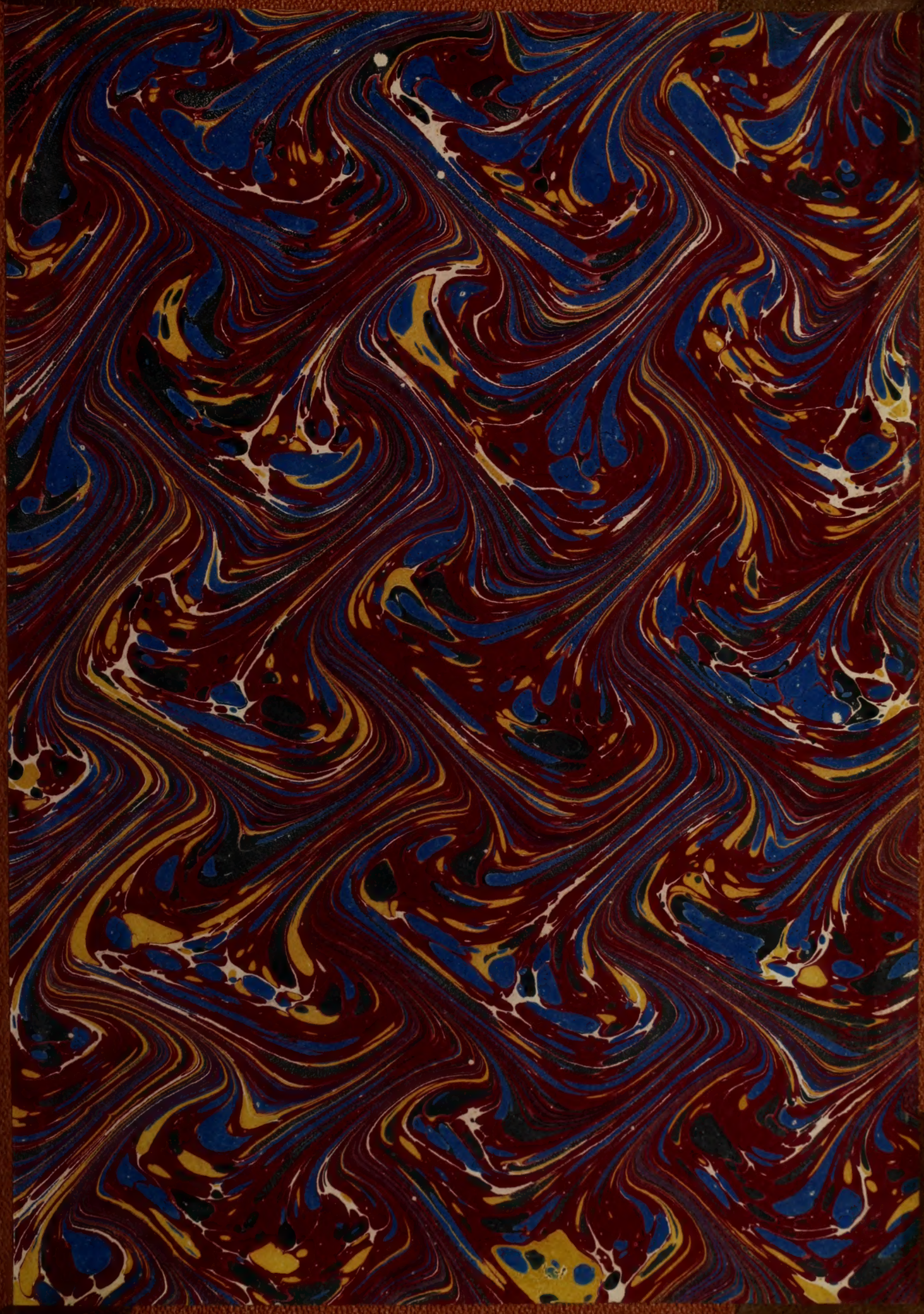
	Page.
Dacelo vaillanti	177
,, vitiensis	223
Daceloninæ	v., x.
damarensis, Halcyon	183, 184
Dark-blue Kingfisher	25
dea, Alcedo	281
,, Tanysiptera	279, 281
Deceptive Kingfisher	135
Dein-ngyeen	119
diemensis, Alcyone	41, 47
diemenensis, Alcyone	47
Dillwynni, Ceyx	123, 125, 126
Dillwyn's Kingfisher	135
diops, Alcedo	205
,, Dacelo	205
,, Halcyon	205, 208
,, Todirhamphus	205
divinus, Todirhamphus	245
domingensis, Megaceryle	79
doris, Tanysiptera	263
dryas, Halcyon	40, 193, 196
,, Dacelo	193
Dull-green Kingfisher	233
Dusky-crested Kingfisher	33
Eastern Kingfisher	181
Elliot's Kingfisher	271
Emiliæ, Tanysiptera	263, 265, 283
Entomobia gularis	165
,, cyanoventris	167
,, fusca	161
,, pileata	169
,, smyrnensis	161
Entomothera fusca	161
,, gularis	165
,, melanoptera	167
,, pileata	169
,, smyrnensis	161
epops, Upupa	15
erithaca, Alcedo	119
Erooro	245
erythaca, Ceyx	119
erythrogaster, Alcedo	171
,, Halcyon	171
erythrogastra, Halcyon	171, 172
erythrorhyncha, Halcyon	171
Euphrosiæ, Melidora	303
Euphrosine, Melidora	303
euryzona, Alcedo	19, 29, 30
fallax, Ceycopsis	135
,, Dacelo	135
flammea, Columma	194
Flat-billed Kingfisher	247
flavirostris, Halcyon	153
,, Syma	152, 153, 154
Flores Stork-billed Kingfisher	111
floresiana, Pelargopsis	107, 111
Forsteni, Dacelo	235
,, Halcyon	235
Forsten's Kingfisher	235
Fraseri, Pelargopsis	103, 104
Fraser's Stork-billed Kingfisher	103
fulgidus, Caridonax	257
fulgida, Dacelo	257
funebris, Dacelo	243
,, Halcyon	242, 257
,, Todirhamphus	243
fusca, Alcedo	161, 165, 285

	Page.
fusca, Dacelo	161
,, Entomobia	161
,, Entomothera	161
,, Halcyon	159, 161, 165, 166
fuscicapilla, Chelicutia	177
,, Dacelo	177
,, Halcyon	170, 177, 185
,, Pagurothera	177
galatea, Tanysiptera	272, 281
Galatea Kingfisher	281
Gaudichaudi, Choucalcyon	295
,, Dacelo	295, 297
,, Monachalcyon	295
,, Sauromarptis	295
Gaudichaud's Kingfisher	295
gigantea, Alcedo	285
,, Dacelo	285, 290
gigas, Alcedo	285
,, Dacelo	285, 286, 287, 288, 290, 292
,, Paralcyon	285
Gogobera	285
Grand Martin-pêcheur de la Nouvelle Guinée	285
Grand Martin-pêcheur de Madagascar	165
Grayi, Dacelo	227
,, Halcyon	233
,, Sauropatis	233
Great Brown Kingfisher	285
Guepier de la cote de Coromandel	156
gularis, Alcedo	165
,, Entomobia	165
,, Entomothera	165
,, Halcyon	159, 165
Halcyon abyssinica	229
,, albicilla	197, 198
,, albiventris	177, 182
,, australasiæ	215
,, badia	159
,, cancrophaga	159, 191
,, Cassini	223
,, chelicutensis	183
,, chelicuti	183
,, chloris	166, 229, 230
,, chlorocephala	229
,, cinereifrons	195
,, cinnamomina	213, 214, 215
,, collaris	229, 239
,, concreta	219
,, coromanda	155, 156
,, coromanda major	155
,, coromanda minor	155
,, coromandeliana	155, 156
,, coromandelianus	155, 156
,, coromandelicus	155
,, coromander	155
,, coronata	215, 223
,, cyanoleuca	189, 192
,, cyanoventris	167, 168
,, damarensis	183, 184
,, diops	205, 208
,, dryas	193, 196
,, erythrogaster	171
,, erythrogastra	171, 174
,, erythrorhyncha	171
,, flavirostris	153
Halcyon Forsteni	235
,, fulgidus	257
,, funebris	242
,, fusca	159, 161, 165
,, fuscicapilla	170, 177, 185
,, Grayi	233
,, gularis	159, 165, 166
,, Hombroni	221
,, incinctus	207
,, irrorata	187
,, Jacquinoti	207, 208
,, Juliæ	227
,, lazuli	203
,, leucocephala	173
,, leucopygia	199
,, lilacina	155
,, Lindsayi	217
,, Macleayi	204, 207, 208
,, malimbica	195, 196
,, melanops	253
,, melanopterus	167
,, monachus	255
,, multicolor	167
,, nigrocyanea	201
,, omnicolor	167
,, orientalis	178, 181
,, pealei	223, 225
,, pileata	169, 170
,, platyrostris	247
,, princeps	255
,, pulchella	251
,, pygmæa	783
,, pyrrhopygia	211
,, pyrrhopygius	211
,, recurvirostris	247
,, Reichenbachii	213, 214
,, rufa	155, 156, 157
,, ruficeps	213
,, ruficollis	165
,, rufiventer	173
,, rufiventris	171
,, sancta	207, 212, 239
,, sanctus	208, 299, 234, 237, 239
,, sacra	223, 224, 225, 227, 239, 249, 250
,, saurophaga	197
,, Schlegeli	155, 156
,, semicærulea	171, 173, 174, 175
,, senegalensis	189, 191
,, senegaloides	187
,, smyrnensis	161
,, smyrnensis, var. albogularis	165
,, sordida	233
,, sordidus	233
,, striolata	183, 185
,, superciliosa	223, 225
,, Swainsonii	173
,, torotoro	151, 153
,, torquata	195
,, torquatus	195
,, tuta	245
,, vagans	237
,, vaillantii	177
,, varia	219

	Page.
Halcyon variegata	183
,, venerata	245
,, vitiensis	223
Hombroni, Actenoides	221
,, Halcyon	221
Hombron's Kingfisher	221
Hooded Kingfisher	255
Hook-billed Kingfisher	303
hydrocharis, Dacelo	273
,, Tanysiptera	273, 275
incinctus, Halcyon	207
irrorata, Halcyon	187
isis, Tanysiptera	277
Jacquinoti, Halcyon	207, 208
jagoensis, Halcyon	171
Japanese Spotted Kingfisher	59
japonica, Alcedo	11, 13
javana, Alcedo	99
,, Halcyon	103
,, Ramphalcyon	103
javanica, Alcedo	99
,, Halcyon	103
Juliæ, Halcyon	227
,, Sauropatis	227
Kaioa Kingfisher	267
Kingfisher, Acis	275
,, African White-headed	173
,, Aguapim	147
,, Amazon Green	83
,, Angola	189
,, Aru Island	273
,, Ashy-fronted	195
,, Australian Saw-billed	153
,, Azure	41
,, Banded	251
,, Batchian	51, 277
,, Beautiful	131
,, Belted	79
,, Beryl	31
,, Black-capped	169
,, Black-cheeked	253
,, Blue and Black	201
,, Blue and White	257
,, Blue-crested	89
,, Blue-eared	301
,, Blue-girt	55
,, Bornean	123
,, Bornean Stork-billed	99
,, Bouru	125
,, Brazilian Green	189
,, Broad-belted	29
,, Brown-hooded	177
,, Brown-shouldered Stork-billed	97
,, Buff Laughing	291
,, Burmese Stork-billed	109
,, Cabanis' Green	87
,, Ceram	279
,, Chesnut	159
,, Chilian	77
,, Cinnamon	213
,, Cinnamon-breasted	259
,, Common	1
,, Coronetted	215
,, Cream-coloured Stork-billed	95
,, Dark-blue	25
Kingfisher, Deceptive	135
,, Dillwyn's	125
,, Dull-green	233
,, Dusky-crested	33
,, Eastern	181
,, Elliot's	271
,, Flat-billed	247
,, Flores' Stork-billed	111
,, Forsten's	235
,, Fraser's Stork-billed	103
,, Galatea	281
,, Gaudichaud's	295
,, Gould's Stork-billed	101
,, Great African	67
,, Great Brown	285
,, Great Indian	19
,, Half-collared	27
,, Himalayan Spotted	57
,, Hombron's	221
,, Hooded	255
,, Hook-billed	303
,, Indian Stork-billed	105
,, Japanese Spotted	59
,, Kaioa	267
,, Laughing	285
,, Lazuli	203
,, Leach's Laughing	289
,, Least Green	93
,, Leconte's	149
,, Lesson's	49
,, Libyan	183
,, Lindsay's	217
,, Macleay's	207
,, Madagasear	137
,, Malacca Stork-billed	107
,, Malachite-crested	35
,, Mangrove	187
,, Mantled	297
,, Many-coloured	167
,, Morty Island	263
,, New Hebrides	227
,, New Zealand	235
,, Otaheite	249
,, Raou	265
,, Red-backed	211
,, Red-breasted	269
,, Respected	249
,, Riedel's	283
,, Ruddy	155
,, Sacred	223, 239
,, Sad-coloured	243
,, Sanghir	299
,, Saw-billed	151
,, Senegal	191
,, Society Islands	245
,, St. Jago	171
,, Striped	183
,, Sumatran	219
,, Temminck's	205
,, Venerated	245
,, White and Green	197
,, White-breasted	161
,, White-backed	199
,, White-browed	223
,, White-collared	229
,, White-throated	165
,, Wood	193

	Page.
Kooto-o-oo	249
Kotare	237
Lacedo melanops	253
,, pulchella	251
Lá-rool	291
Laughing Kingfisher	285
lazuli, Alcedo	203
,, Cyanalcyon	203
,, Dacelo	203
,, Halcyon	203
Lazuli Kingfisher	203
lazuli, Todirhamphus	203
Leach's Laughing Kingfisher	289
Leachi, Dacelo	289, 290, 292, 294
lessonia, Syma	151
Lessonii, Actenoides	227
,, Dacelo	217
leucocephala, Alcedo	173
,, Halcyon	173
leucopygia, Halcyon	199
leucopygius, Cyanalcyon	199
Libyan Kingfisher	183
lilacina, Callalcyon	155
,, Halcyon	155
Lindsayi, Alcedo	217
,, Astacophilus	217
,, Dacelo	217
,, Halcyon	217
,, Paralcyon	217
Lindsay's Kingfisher	217
lutea, Certhia	156
Macleayii, Cyanalcyon	207
,, Dacelo	207
,, Halcyon	204, 207, 208
,, Todirhamphus	207
Macleay's Kingfisher	207
macrorhina, Dacelo	303
,, Melidora	303
macrorhinus, Dacelo	303
macrorhynchus, Dacelo	303
macrurus, Turdus	156
malimbica, Alcedo	195
,, Cancrophaga	195
,, Halcyon	195, 196
Mangrogone	295
Mangrove Kingfisher	137
Mankinetrous	295
Many-coloured Kingfisher	167
Mantled Kingfisher	297
Margarethæ, Tanysiptera	277
margaretta, Tanysiptera	277
Martin-pêcheur a collier blanc des Philippines	229
Martin-pêcheur a tête grise de Sénégal	191
Martin-pêcheur à tete verte du Cap de Bonne Esperance	229
Martin-pêcheur à ventre sablé	189
Martin-pêcheur bleu et noir de Senegal	173
Martin-pêcheur de la Chine	169
Martin-pêcheur de la cote de Malabar	161
Martin-pêcheur de la Nouvelle Guinée	285
Martin-pêcheur de l' isle de Luçon	177
Martin-pêcheur de Pondicherry	119
Martin-pêcheur huppé du Cap de Bon Esperance	61
Martin-pêcheur huppé de Mexique	73
Martin-pêcheur huppé de St. Domingue	
Martin-pêcheur noir et blanc de Senegal	61
Martin-pêcheur petit vert de Cayenne	93
Martin-pêcheur vert et blanc de Cayenne	89
Martin-pêcheur vert et roux de Cayenne	91
Le Martin-pêcheur violet des Indes	155
Martin-pescador celeste	73
Martin-pescador celeste obscuro	73
Martin-pescador garganta roxa	83
Martin-pescador obscuro dorada	83
Martin-pescador verde obscuro	89
maxima, Alcedo	67
,, Ceryle	67, 68, 69, 71, 80
,, Megaceryle	67, 68
maximus, Ichthynomus	67
Megaceryle alcyon	79
,, cæsia	73
,, domingensis	79
,, gigantea	67, 68
,, guttata	57
,, lugubris	59
,, maxima	67, 68
,, stellata	77
,, torquata	73
melanops, Carcineutes	253
,, Dacelo	253
,, Lacedo	253
melanoptera, Alcedo	165, 167
,, Dacelo	167
,, Entomothera	167
melanopterus, Halcyon	167
melanorhyncha, Alcedo	95
,, Halcyon	95
,, Hylcaon	95
,, Pelargopsis	95
,, Rhamphalcyon	95
melanura, Ceyx	117, 125
,, Dacelo	117
Melidora	xx.
Melidora Euphrosiæ	303
,, euphrosine	303
,, macrorhina	303
meninting, Alcedo	23, 24, 32
,, Ceyx	23, 115
Meninting	23
Meninting-watu	31
Merops viridis	156
microsoma, Ceyx	119
minor, Alcedo	11
minor moluccensis, Alcedo	21
Molucca Kingfisher	21
moluccensis, Alcedo	11, 14, 21, 22, 113
Monachalcyon	xviii.
Monachalcyon Gaudichaudi	295
,, monachus	255
,, princeps	255
monachus, Dacelo	255
,, Halcyon	255
,, Monachalcyon	255
monachus, Paralcyon	255
Morty Island Kingfisher	263
multicolor, Halcyon	167
Myioceyx	xiii.

	Page.
nais, Alcedo	39
,, Corythornis	39, 40
,, Tanysiptera	279
natalensis, Alcedo	145
,, Ispidina	40, 145
Natal Kingfisher	145
Nethug	227
New Hebrides Kingfisher	227
New Zealand Kingfisher	237
nigricans, Alcedo	19, 29
nigrocyanea, Dacelo	201
,, Halcyon	201
nitida, Alcedo	145
,, Corythornis	145
,, Ispidina	40, 145, 146
nullitorquis, Dacelo	245
Nu-rea-bin-mo	53
nutans, Alcedo	141, 145
nympha, Alcedo	269
,, Tanysiptera	269
occidentalis, Dacelo	293
occipitalis, Todirhamphus	229, 230
omnicolor, Alcedo	167
,, Dacelo	167
,, Halcyon	167
Opere	141
orientalis, Halcyon	178, 181
Otaheite Kingfisher	249
Otatare	250
Paralcyon cervina	291
Pagurothera chelicuti	183
Pallasii, Alcedo	1, 2
Paralcyon concreta	219
,, coronata	215
Pagurothera fuscicapilla	177
Pagurothera variegata	183
Paralcyon gigas	285
,, Lindsayi	217
,, monachus	255
pealei, Halcyon	223, 225
Pelargopsis	ix.
Pelargopsis amauroptera	97
,, burmanica	104, 109
,, floresiana	107, 111
,, Fraseri	103, 104
,, Gouldi	101
,, gurial	105, 107
,, leucocephala	99, 101, 104
,, malaccensis	107
,, melanorhyncha	195
Penang Kingfisher	119
pendula, Acacia	211
Petit Martin-pêcheur aigue marin	31
Petit Martin-pêcheur de l'Isle de Luçon	35
philippensis cristata, Alcedo	33
,, Ceyx	56, 113
Philippine Kingfisher	113
picta, Alcedo	141, 145
,, Ispidina	141, 142, 145, 146
picturata, Alcedo	145, 146
pictus, Todus	141
Pied Kingfisher	61
pileata, Alcedo	169
,, Dacelo	169
,, Entomobia	169
pileata, Entomothera	169
,, Halcyon	169, 170
pileatus, Halcyon	16
platyrostris, Halcyon	247
,, Todirhamphus	247
princeps, Dacelo	255
,, Halcyon	255
,, Monachalcyon	255
pulchella, Dacelo	251
,, Halcyon	251
,, Lacedo	251
pulchellus, Carcineutes	251, 252
pulchra, Alcyone	41, 45
puella, Alcedo	169
purpurea, Alcedo	119, 120, 141
,, Ceyx	119
pusilla, Alcedo	53, 141
,, Alcyone	53, 54
,, Ceyx	53
pygmæa, Chelicutia	183
,, Dacelo	183
,, Halcyon	183
pyrrhopygia, Dacelo	211
,, Halcyon	211
,, Sauropatis	211
pyrrhopygius, Cyanalcyon	211
,, Todirhamphus	211
quadribrachys, Alcedo	25, 26
Quatawur	259
Raja Whodan	119
Rajah Udong	99
Ramphalcyon amauroptera	97
,, capensis	109
,, gurial	105
,, javana	103
,, melanorhyncha	95
Raou Kingfisher	265
recurvirostris, Coporhamphus	247
,, Halcyon	247
,, Todirhamphus	247
Red-backed Kingfisher	211
Red-breasted Kingfisher	269
Reichenbachii, Halcyon	213, 214
Respected Kingfisher	249
Riedeli, Tanysiptera	283
Riedel's Kingfisher	283
Ringed Kingfisher	73
Rose-cheeked Kingfisher	141
rubescens, Alcedo	83
rubra, Alcedo	119
,, Ceyx	119
,, Dacelo	119
rudis, Alcedo	61
,, Ceryle	4, 16, 26, 61, 63, 64, 65, 162
,, Ispida	61
Ruddy Kingfisher	155
rufa, Halcyon	155, 156, 157
ruffulus, Dacelo	137
ruficeps, Alcedo	213
,, Dacelo	213
,, Halcyon	213
,, Ispidina	147
ruficollis, Halcyon	165
rufidorsa, Ceyx	120, 121, 129, 138
,, Dacelo	121

	Page.
rufirostris, Alcedo	165
rufiventer, Halcyon	173
rufiventris, Cancrophaga	173
,, Dacelo	171
,, Halcyon	171
Rufous and Green Kingfisher	91
sabrina, Dacelo	263
,, Tanysiptera	267
sacer, Coporhamphus	247
,, Todirhamphus	223, 249
sacra, Alcedo	223, 239
,, Dacelo	249
,, Halcyon	223, 224, 225, 227, 239, 249, 250
,, Todirhamphus	249
,, var. D, Alcedo	237
,, var. ϵ, Alcedo	229
,, var. ϵ, Alcedo	237
,, var. γ, Alcedo	229
Sacred Kingfisher	223, 239
Sad-coloured Kingfisher	243
Sakaika	91
Salba	295
salussii, Dacelo	291
sancta, Dacelo	237, 239
,, Halcyon	207, 212, 239
,, Sauropatis	239
sanctus, Halcyon	208, 209, 234, 237, 239
,, Todirhamphus	239
Sanghir Kingfisher	299
Sanghirensis, Cittura	299
,, Dacelo	300
Sauromarptis Gaudichaudi	295
,, tyro	297
Sauropatis, australasiæ	215
,, chloris	229
,, cinnamomina	213
,, Grayi	233
,, Juliæ	227
,, pyrrhopygia	211
,, sancta	239
,, sordida	233
,, superciliosa	223
saurophaga, Halcyon	197
saurophagus, Todirhamphus	197
Saw-billed Kingfisher	151
Schlegeli, Halcyon	5, 6, 155, 156
semicærulea, Alcedo	173
,, Cancrophaga	173
,, Halcyon	171, 173, 174, 175
semitorquata, Alcedo	26, 27, 37
Senegal Kingfisher	191
senegalensis, Alcedo	191
,, Cancrophaga	191
,, Dacelo	191
,, Halcyon	189, 191
,, var. a., Alcedo	171
,, var. b., Alcedo	173
,, var. d., Alcedo	173
,, var. e., Alcedo	171
,, var. g., Alcedo	171
,, var. j., Alcedo	173
senegaloides, Cancrophaga	187
,, Halcyon	187
Sharpe's Kingfisher	71
Sharpei, Ceryle	71, 73
,, Ceyx	123
Silvery-backed Kingfisher.	133, 134
smyrnensis, Alcedo	161, 162
,, Dacelo	161
,, Entomobia	161
,, Entomothera	161
,, Halcyon	4, 15, 16, 63, 161
,, var. albogularis, Halcyon	165
,, var. b., Alcedo	165
Society Island's Kingfisher	245
solitaria, Alcedo	115
,, Alcyone	115
,, Ceyx	115
Solitary Kingfisher	115
sondaica, Alcedo	11, 13
sordida, Halcyon	233
,, Sauropatis	233
sordidus, Todirhamphus	233,
,, Halcyon	233
Spotted Kingfisher	91
stellata, Ceryle	77
,, Chloroceryle	77
,, Megaceryle	77
Streptoceryle alcyon	79
,, torquata	73
,, stellata	77
St. Jago Kingfisher	171
striata, Dacelo	177
Strickland's Kingfisher	121
striolata, Alcedo	183
,, Chelicutia	183
,, Dacelo	183
,, Halcyon	183, 185
Striped Kingfisher	183
subispida, Alcedo	1
Sumatran Kingfisher	219
Sumbo	183
superciliosa, Amazonis	93
,, Alcedo	93
,, Ceryle	92, 93
,, Chloroceryle	93
,, Halcyon	223, 225
,, Sauropatis	223
Swainsonii, Halcyon	173
sylvia, Dacelo	259
,, Tanysiptera	154, 259
,, Uralcyon	259
Syma	xiii.
syma, Dacelo	153
Syma flavirostris	152, 153, 154
,, lessonia	151
,, torotoro	151, 153, 154
Tanatick	197
Tanysiptera	xix
,, acis	275
,, dea	279, 281
,, doris	263
,, Ellioti	271
,, Emiliæ	263, 265, 283
,, galatea	272, 281
,, hydrocharis	273, 275
,, isis	277
,, Margarethæ	277
,, margaretta	277

	Page.
,, nais	279
,, nympha	269
,, Riedeli	283
,, sabrina	267
,, sylvia	154, 259
Telampuica	196
Temminck's Kingfisher	205
Tengke-buto	103
Tengke-wrang	167
Therosa solitaria	115
Tiacalla	247
Tinnunculus alaudarius	172
Todier de Juida	141
Todirhamphus	xviii.
Todirhamphus, albicilla	197
,, australasiæ	239
,, chloris	229
,, chlorocephalus	229
,, cinereifrons	195
,, cinnamominus	213
,, collaris	229
,, coronatus	215
,, diops	205
,, divinus	245
,, funebris	243
,, lazuli	203
,, Macleayii	207
,, occipitalis	229, 230
,, platyrostris	247
,, recurvirostris	247
,, sacer	223, 249
,, sacra	249
,, sanctus	239
,, saurophagus	197
,, sordidus	233
,, torotoro	153
,, tuta	223, 249
,, tutus	246, 249, 250
,, vagans	237
,, varius	219
,, venerata	245
,, veneratus	245, 250
,, vitiensis	223
Todus cæruleus	141
,, pictus	141
torotoro, Dacelo	153
,, Halcyon	151, 153
,, Syma	151, 153, 154
,, Todirhamphus	153
torquata, Alcedo	73, 77
,, Ceryle	73, 74, 75, 77, 80, 84
,, Halcyon	195
,, Megaceryle	73
,, Streptoceryle	73
torquatus, Halcyon	195
tribrachys, Alcedo	41
,, Ceyx	41
tridactyla, Alcedo	119
,, Ceyx	119, 120, 121, 122, 125
,, var., Alcedo	121
tschelicutensis, Dacelo	183
Turdus macrurus	156
tuta, Alcedo	249
,, Halcyon	245
,, Todirhamphus	223, 249
tutu, Halcyon	245
tutus, Todirhamphus	246, 249, 250
tyro, Dacelo	297
,, Sauromarptis	297
Udang	169
ultramarina, Alcedo	141
undulata, Alcedo	285
undulatus, Dacelo	285
Uralcyon sylvia	259
vagans, Alcedo	237
,, Halcyon	237
,, Todirhamphus	237
vaillanti, Dacelo	177
,, Halcyon	177
varia, Halcyon	219
variegata, Actenoides	221
,, Alcedo	183
,, Halcyon	183
Van Diemen's Land Kingfisher	47
varia, Ceryle	61, 65
variegata, Pagurothera	183
varius, Todirhamphus	219
venerata, Alcedo	245
,, Halcyon	245
,, Todirhamphus	245
Venerated Kingfisher	245
veneratus, Coporhamphus	245
,, Todirhamphus	245, 250
Verreauxii, Alcedo	23, 24
vestita, Alcedo	83
Vinchi	33
vintsioides, Alcedo	33
,, Corythornis	33, 34
viridirufa, Alcedo	91
,, Ceryle	91
,, Chloroceryle	91
viridis, Alcedo	89
,, Merops	156
vitiensis, Dacelo	223
,, Halcyon	223
,, Todirhamphus	223
Wallacii, Ceyx	129
Wallace's Kingfisher	129
White and Green Kingfisher	197
White-backed Kingfisher	199
White-breasted Kingfisher	161
White-browed Kingfisher	223
White-collared Kingfisher	229
White-headed Kingfisher	99
White-throated Kingfisher	165
Wood Kingfisher	193
Yungipicus Hardwickii	15